# The Builder.

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Second Premiated Design
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St. Andrews, Helsingfors ..... Mr. R. S. Lorimer, A.R.S.A., Architect.
Cottage, Beccles ..... Mr. W. A. Pite, F.R.I.B.A., Architect.


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## *The History of the Easement of Light.*

ARCHITECTS, surveyors, and lawyers have grown so accustomed to regard the easement of light as a part of the law of the land, that they pay little or no regard to its history. No doubt, for the practical purposes of to-day, for the purpose of deciding whether the light to a particular window is or is not obstructed, the history of the growth of the easement is a matter of small importance. But no one, whether he be architect or lawyer, who takes a larger view of his calling than the mere hand-to-mouth practitioner, can properly be ignorant of the outlines of the growth of the easement.

It is not unreasonable to say that the origin or the foundation of the English easement of light—the right which exists in a dominant tenement to the enjoyment of light over a servient tenement—may be found in the Roman jurisprudence, where the right to light formed part of the *jura prædiorum urbanorum*, or prædial urban servitudes. But this, though termed an urban servitude, related to houses both in country and town. It occurred in two forms, either as a *servitus altius non tollendi*, by which the owner of the dominant could prevent the owner of the servient tenement from raising his house beyond a certain height in other cases than those in which his light was obstructed, or as a *servitus ne luminibus officiatur*. This latter form is that which is most nearly identical with our modern servitude, because the owner of the servient tenement was then bound not to obstruct the light of the dominant tenement. (Instit. Lib. ii., tit. 3; Digest, Lib. viii., tit. 2, ss. 1, 2, 3.)

But the idea that this portion of Roman law is the basis of our modern English law on this subject can only be supported by a train of reasoning from historical facts and not by any direct evidence. It is now indisputable that the mediæval lawyers of England—of whom the most celebrated is Bracton, or, more correctly, Henry of Bratton, who lived, judged, and wrote in the middle of the thirteenth century—studied Roman law, and, in consequence of their studies, incorporated its principles in what has become known as the English Common Law. "Bracton's debt," wrote the first of modern English legal historians, "and, therefore, our debt, to the civilians is inestimably great. But for them his book would have been impossible." (Pollock and Maitland, "History of English Law," i., 187.) But Bracton—like others who studied the Roman jurisprudence—was a judge of assize, and it would be contrary to all experience to suppose that, in deciding legal questions as judges, these men should not have shown the influence of their studies. This, then, is the manner in which the previously stated conclusion is reached, and not by the appearance in an ancient legal decision of any actual and direct reference to a particular passage in Roman jurisprudence.

The easement of light is one which would only become important in a highly civilised community and in towns. When there was neither civilisation nor towns there could, of necessity, be no obstruction of light, and one may perhaps go as far as to say that, until houses in towns grew to a considerable height, the question of obscuration could scarcely be one of any importance. As soon, however, as this easement begins to appear in the law courts we find it to be in a curious and interesting state. We perceive, in fact—generally speaking—a legal right to the easement in country places and no right in towns. In Rolles' "Abridgement" (ii., 140) we find stated what seems to be the earliest decision on the subject, a judgment of Justice Markham—presently to be Chief Justice of England—in 1444, in the twenty-second year of the reign of Henry VI. Rolles' book was published in 1668, but it would seem that he copied his passage from some ancient record, since it is printed in mediæval French. "*Si jeo un meason per prescription sur mon soile, et un auter erca un novel meason sur son soile desmesne prochein adjoynt cy pres al mon meason que ceo estopp le lumier de mon meason, ceo est un Nusans al mon meason, car le lumier est de grand comfort et profit al homes.* 22 Hen. VI., 15, per Markham." "If I have a house, and my neighbour builds so as to obscure the light, that is a nuisance, for light is a comfort and a profit to a house." Here we have a large principle stated broadly without any qualifications—the owner of a house which has enjoyed light thereto is not to be deprived of it by a new building. And on this pleasure of light, and on the disagreeableness of darkness, we find constant stress laid from that time forth. But with this natural and laudable longing for light there presently came into conflict the desire to see flourishing and well-populated cities—a desire which implied

contiguity of habitation, and consequently from time to time a lessening of the quantity of light enjoyed by houses in cities. And so a legal custom grew up in towns—certainly in London and in York, and we may presume in all the important towns of England—to permit the building of a house to any height even though it should thereby obscure or even totally destroy the light entering an adjoining house. It was a good custom, having "a lawful commencement or reason in cities and boroughs; for if a tradesman has settled himself in a commodious part of the city, but if he increases in his trade and his house becomes too small for his company, he may build higher for his better habitation, and it is well allowable, for it tends to the peopling of cities and to the encouragement of tradesmen in such places." (Hughes *v.* Kene, "Yelverton's Reports," 215 (1612).) This is a good plain, commonsense reason, and one may perhaps regret that it has not continued to be the basis of the law of England, for there can be no doubt that the easement of light is one which, however useful to the dominant tenement, is singularly burdensome on and injurious to the servient tenement. But the general principle which underlay the custom of London and other towns was limited by an important qualification—that the right to obscure the light of a dominant tenement could only exist when the newly-erected servient building was on the exact foundations of an old building. See Aldred's case, 9 "Coke's Reports," 58*b* (1611), which contains interesting references to older decisions. This limitation was in time necessarily fatal to the custom, because it limited it locally and gave free scope, outside very defined areas, to what may be called the principle of Roman Law. The truth was that the good sense of our ancestors recognised the desirability of free building in cities; but want of foresight, an incapacity to look ahead to the growth of towns, and possibly the force of the Roman principle, antagonistic as it was to local customs, caused such a limitation of this custom as to render it certain that, sooner or later, it would be destroyed by the general principle.

The year of destruction was 1832, when, apparently without remonstrance, the Government passed (in August) the Prescription Act, by which all local customs as to the easement of light were abolished, and a dominant tenement became entitled to an indefeasible right to light if it had been enjoyed for twenty years, and English jurisprudence on this subject became assimilated to the system which had prevailed in Italy two thousand years earlier. The right to the enjoyment of light became vested in the dominant tenement by a purely prescriptive title. Thus an end was put to the question whether the really prescriptive title which had existed before 1832 was based, as some lawyers argued, on a lost grant, or an implied covenant by the owner of the servient tenement not to obscure the light of the dominant tenement—a contention which shows the strength of legal fictions and the ingenuity of English lawyers in reconciling feudal theories with actual facts. For, since where there was no owner of land the King was lord, no title to land could be gained without a grant, and so it was argued that wherever a right to light existed, there must in a distant past have been a grant of the easement.

But though the principles of Roman Law thus became universal in England in 1832, it is curious to note that at no time did they ever largely prevail in the United States, where the progressive character of American society has caused the old English customs of London and York to form the basis of the law. In the States of New York, Massachusetts, Maine, Connecticut, Pennsylvania, South Carolina, Alabama, and Maryland it has been definitely decided that there is no right to the easement of light by prescription. The reason was clearly stated long ago, "it (the easement) is an anomaly of the law. It may do well enough in England, but it cannot be applied in the growing cities and villages of this country without working the most mischievous consequences." (Parker *v.* Foote, 19 Wendell, 309 (Supreme Court of New York, 1838).) It is obvious that the reasoning is equally applicable to the growing cities of Great Britain. The practical results of the American law are the enormous buildings, which form so characteristic a feature of the cities of the United States.

Among European nations we naturally find this easement to exist. In France it is a servitude, and falls within the category of the servitudes referred to in the Code Napoléon. (Code Civil, Leo. II., tit. vi., ch. iii.) In Germany, too, the easement is legally recognised (Bürgerliches Gesetzbuch, par. 1018, 1019), ceasing to exist only by one of three causes—by loss of its value, by agreement, or by continued obstruction. Thus it would seem that the United States is the only nation which does not, in some form or other, recognise the validity of the easement of light.

## THE CHICAGO THEATRE CATASTROPHE.

THE terrible calamity at Chicago gives reason for serious thought amongst all interested in theatre construction or management. Putting aside all the sensational elements, the fact remains that many hundreds of lives have been lost in a modern building standing in a city that has fairly modern building regulations and a first-class fire brigade, and has had a bitter experience of earlier fire catastrophes.

Pending authentic information, we will assume that the origin of the fire was due to an arc-light getting out of order. We will further assume that the fire-resisting curtain did not work properly; that the stage management was defective; that the theatre fireman applied his energies in the wrong direction; and that the stage mechanics lost their heads. For all that, we consider that such a terrible calamity should have been impossible, and, what is more, that it can be made impossible in the future. The series of unhappy circumstances which we have assumed are exactly the series of accidents that must be guarded against by those who build, equip, and control theatres. The human element of mishaps and excitement must be considered besides the possibility of a sequence of such mishaps and circumstances. There is, however, not the slightest reason why even a yet greater series of mishaps should result in a catastrophe. What we require is safety for the public and for the actors, no matter what be the character of the accident, or what be the complications or blunderings arising therefrom.

If we turn to the record of the International Fire Prevention Congress held in London in July last, we find the following opinions expressed:—

*Re Theatre Safety.*

THE Congress considers:

1. That the first essential for the safety of the public attending theatres is the provision of easy means of exit from the auditorium by *direct* and clear routes of exit as distinct from circuitous routes.

2. That next in importance to the provision of exits, the safety of the public requires the provision of suitable fire watches and careful fire survey with the view to the prevention of fire.

3. That the safeguard third in the scale of importance is the provision of automatic sprinklers over the stage.

4. That questions of suitable construction, fitting, and equipment only rank after the above three primary safeguards for the protection of the public.

These resolutions, embodying the combined opinion of those best versed in the subject, clearly indicate the policy to be pursued if the public safety is to be guarded.

Whilst in one country the public authorities cannot agree on a pattern of panic-bolt, or the exact dimensions of the rise and tread of a theatre staircase, in another country we find experts debating as to whether asbestos curtains or iron curtains are the best. Again, in one capital city the theatre managers and the local authorities may be debating whether some form of impregnated wood should be used or not, and in another city they may be disagreeing whether the lime-light is to be superseded compulsorily by the electric light or not. Concrete floors are argued for and against, armoured wood doors discussed *versus* iron doors; but, above all this, the one plain element of safety remains, and that is—*ample exit facilities*. Whether the exit be over a concrete staircase or one of hardwood; whether the exit be through an iron door or a wooden door; whether the panic-bolt be pattern A or pattern B, is immaterial, as long as the exit is a plain, straight exit with no circuitous route, and leads directly into the street. Again, no matter what may be the safeguards of construction, supervision, revision, and surprise visits, what is wanted on the spot when an accident occurs is a staff of *self-possessed, well-trained firemen of experience*. We say firemen advisedly, for we believe in numbers. We advocate the "fire-watch" of first-class well-paid firemen. The bogus fireman of the general servant type is not only useless but dangerous. Only men of nerve, to whom fires of all sorts are a common occurrence, are the men who should form the "fire-watch" of a theatre.

Next, with regard to fire extinction; the stage sprinkler is one of the few automatic appliances which will, as a rule, do its duty effectively and reliably. It should be applied over all theatre stages, as the extinction of the fire becomes automatic with its aid.

Given, as the Congress very wisely resolved, these three primary elements of safety, it may be possible for any number of accidents to occur in a theatre without loss of life either from fire or panic. All the other safeguards to be found in theatre regulations naturally reduce the possibility of fire, and are of eminent value in preventing the possibility of panic; but without the three primary elements named they are practically useless, for should a mishap occur disastrous consequences are probable. Better construction—in fact, fire-resisting construction of the first order—must be strongly advocated for a theatre. But, again, no matter how excellent and how fire-resisting the construction, the absence of the above three primary principles would preclude safety for the public. The building would perhaps not be much damaged—as apparently it has not been in the case of Chicago—there would be no conflagration as understood by that term; the theatre manager's pecuniary loss and the insurance companies' pecuniary loss would no doubt be less; the possibility of fire is also reduced by good construction. But, given the outbreak of fire without the above-named primary provisions, the result must be of the same disastrous character.

We purposely avoid discussing the actual fire at Chicago in detail until we have full particulars; but we anticipate that the British Fire Prevention Committee, with the aid of its foreign correspondents in the United States, will, as usual, prepare a report that will be of technical utility to all concerned.

It will be probably very difficult to get at the true occurrences on this terrible occasion. There will be so many interests and counter interests at play that the truth will be difficult to arrive at. We of course know that the American Press, as well as our own, considers that the building regulations of Chicago have not been properly administered in this case; and we all are sure that much was done and much occurred that should not have been; but it would hardly be right for us to express an opinion on the administration of a public building department in another country without having received full and impartial particulars.

One matter, however, we should still like to refer to, and that is the general laudatory tone in the public Press in respect to the efforts of the much-abused London County Council to improve theatre safety in this metropolis. Writings by amateurs and enthusiasts outside our official hierarchy resulted in the London County Council's theatre department taking up the matter, first in a somewhat haphazard, but recently in a very businesslike and tactful, manner. The legal position and unpopularity of the Council have all been against good work. But good work has been done, and particularly during the last few years it has been done in a most able and systematic manner, without pressing too hardly on the vested interests of theatre management.

For new London theatres, as distinct from old, we would strongly advocate that the regulations should be immediately revised and strengthened in the direction of the three primary principles of theatre safety above named, and that these should be rigorously enforced. In the old theatres we trust that the tactful management of the officials of the London County Council will lead to the maximum amount of safety being obtained in the same direction, as far as is practicable under the very difficult existing circumstances under which our old theatres are managed and conducted.

## THE ROYAL ACADEMY LOAN EXHIBITION.

THE most interesting feature in the thirty-fifth loan exhibition at Burlington House, opened this week, is that there is one gallery devoted to sculpture and bronzes. The usual neglect of sculpture in what are called exhibitions of "old masters" is of course quite comprehensible. Ancient works in sculpture are far less numerous than paintings, especially in English collections, and owners are less willing to lend sculpture than painting; the risk in transport is greater. In the present case nearly all the ancient work in sculpture consists in small bronzes of the Renaissance epoch, lent by a few collectors. Many of these are interesting, but we confess that we do not feel much enthusiasm for collections of this class of work. They are the kind of things which are classed in catalogues as *objets d'art*, and are bought by collectors rather for their rarity and as drawing-room or library ornaments than for any consideration of their individual artistic beauty or significance. Many of the things in these cases are of little abstract beauty, and their artistic effect is still further lessened by the polished finish which all the best modern sculptors who produce miniature work in bronze avoid, preferring the dead surface *patina* of the material. As examples of work of a former period these collections are historically interesting, but many things among them would be thought commonplace if produced by a modern sculptor. Among those which have a special interest are the bronze pedestal enriched with figures, masks, and eagles, and surmounted by a figure of Pan (No. 6 in Case B)—this is a remarkable piece of work into which the artist, whoever he was, put his whole heart; the "Florentine Boar," by Susini (C 16); the figure of a boy in the same case (C 18), the small lion (E 17) attributed to Donatello, and Briosco's curious fancy representing Pomona seated on the back of a grotesque terminal figure of Pan (C 17). In the black and white room there are four large knockers (not polished up) which are superb specimens of this class of work, worthy to hang on the doors of Renaissance Italian palaces; No. 23 is particularly fine in the clever manner in which the two lions are designed so as to form the sides of the knocker. Among the separate objects in the larger room Adrien de Vries's bronze relief of an allegorical subject (No. 1 in catalogue), lent by the King, is a fine and spirited piece of work.

The real interest of this section of the exhibition lies however in the examples of the work of two recently deceased English sculptors, Harry Bates and Onslow Ford. The latter indeed could not be fairly judged of by the work here, his finest productions being on too large a scale for loan exhibition; but we have his beautiful little recumbent marble figure, "Snowdrift," the bronze pedestal and nude figure entitled "Applause" (a far more interesting work than any Renaissance bronze in the room), and two or three beautiful marble busts, with other small studies. Harry Bates is very well represented by his four relief panels, "Homer," "Socrates," "The Story of Psyche," and "Dido and Æneas." These are sculpture of a high order both in design and feeling. Nothing could be better in decorative line than the group of the two reclining figures listening to Homer. Two small highly-finished marble busts show another side of the work of this fine sculptor, whose early death was so great a loss to English art.

In the picture-galleries this is a Lawrence year. This courtly artist and courtly portrait-painter has suffered an eclipse of fame for a considerable period, and seems now to be "revived" with perhaps a little exaggeration of his claims; indeed the French have latterly made a sort of idol of him; it is difficult to understand why, since his artistic qualities are not of the kind which in general finds favour with the modern French school of artists and critics; but French attitude towards English artists has always been somewhat capricious and inexplicable. The dating of some of Lawrence's portraits here (they are not all dated) does not entirely bear out the criticism we have seen passed upon him—that he became after a certain period hopelessly mannered and theatrical in his style of portraiture. Lawrence died in 1830, and the half-length of the Earl of Liverpool, exhibited in 1828, is as simple and straightforward a piece of portrait-painting as could be desired. The celebrated portrait of "Master Lambton" (52), exhibited in 1825, is theatrical enough, but one cannot deny its charm. The group of "Mrs. Angerstein and Child" (62) is exceedingly pretentious and stilted in treatment; there is no date to this, but one would imagine that it was a late work. But there are some very fine portraits among the numerous examples here collected. Lawrence was not such a master of colour as Reynolds, but in the portraits of "Lord Ribblesdale" (92) and "Miss Farren" (106) he comes very near Reynolds in other respects. It is noteworthy that in his diploma picture, a half-length of "A Gipsy Girl" (55) holding a white hen in her hands, and which is quite different in colour and treatment from any other of his works here, he was evidently thinking of Reynolds and endeavouring to a certain extent to emulate the class of works in which the older painter made a figure of a child the occasion for a special study in colour effect. On the whole, though Lawrence's fame is to some extent *passé* now, and he is not a painter to arouse much enthusiasm, we think the Academy did well to make a special feature of his works for once. He filled an important place in English painting in his day.

The early pictures are in the first

gallery this year, instead of the last. They include a very fine Botticelli, "The Virgin and Child with Angels" (20), the angel figures including that beautiful child head with the brown locks that Botticelli was so fond of; and a fine and well-known Filippo Lippi, "The Annunciation" (25). The large "Holy Family" by Filippino Lippi (13) looks as if it had been very much restored. Opposite to this is a large "Virgin and Child," by Piero di Cosimo (32), a picture in wonderful preservation, but which looks in a more genuine condition than the last-named. Among the other works in this room is a very interesting small "Pietà," by Memling (1), a group of figures round the dead Christ, very carefully painted and very marked in character, and through the window a distant landscape very minutely represented. It is curious indeed to notice this careful attention to landscape as an accessory in the days before landscape-painting became a special branch of art. We see it again in the view from the window in Maître de Flemalle's "Virgin and Child" (4). Among others to be specially mentioned are the "Lady Reading," labelled only "Flemish School" (8); the "Virgin and Child" and "Pietà," two subjects in one frame (19), a typical example of the Sienese School; and the elegant and beautifully drawn little nude figure called "St. John Baptist" (21), by Andrea del Sarto, which, in its combination of correct execution with total absence of feeling, reminds one so much of Browning's poem on this painter. The half-length of a "Young Man, with Hand on Skull" (32), is a fine picture of its school, and may be by Giorgione, whose name, however, is surrounded by almost as many questionings as that of Da Vinci. Pinturicchio's "Camp Scene" (28) is amusing in Pinturicchio's way; the small series of "Judith and Holofernes," by Veronese, is notable only for the closing one, showing the sleeping Holofernes and Judith with the sword (38), which is marked by dramatic spirit; and Bronzino's "St. Catherine" (34), in spite of disagreeable colour and texture, is a half-length of great dignity and nobility of character.

The large gallery is a mingled collection. It includes a large landscape labelled "Rubens" (66), but which it appears by the account was only completed by Rubens after its commencement by Verhulst; it shows the dreary and arid mountain landscape of Spain surrounding the Escurial, and is about as dismal a specimen of landscape-painting as one could well encounter. Among the fine works are Vandyck's Charles I. and his Queen (74 and 78), from the Marquis of Northampton's collection, and his highly characteristic portrait group of two insolent young patricians (76), both of whom no doubt fought well, and were both killed in battle, one at Alresford and the other at Naseby. This picture was at a former exhibition not so very long ago; we remember remarking on it; it would be impossible to find a work more characteristic both of the painter and of the type of society which he painted. Vandyck astonishes us, too, by a quasi-religious painting of "A Magdalen" (88), as insincere and theatrical as anything could well be; and Nicolas Poussin by two religious pictures, "Confirmation" and "Extreme Unction" (84 and 86), which, however, are very interesting and seem painted with real feeling. Gaspar Poussin's "Classical Landscape" (90) is a noteworthy example of the school in which nature was used as the material for composition without any care for truth of detail; looked at from the middle of the room it is a most carefully balanced composition, with a beautiful effect of distance; on a closer view it is all spoiled by the mechanical and conventional character of the foliage. A large and very fine example of Canaletto is also to be noted—a view of Verona (68), the buildings finished *con amore*. A curious point in it is the strongly marked shadow thrown on the surface of the water from the buildings on the left. Either Canaletto must have been rather confused in his mind between the phenomena of shadow and reflection on water, or the Adige must have been a very turbid river when the picture was painted. Among the other works of note in this room are a very fine half-length portrait by Hoppner (89), the head beautifully painted; Reynolds's monumental portrait of the Marquis of Granby (94), with a grand horse in it; Velasquez's portrait of his servant Pareja (79); an early Titian (72); and a fine half-length by Raeburn of James Byers (99), the architect and antiquary, a friend of Byron and Gibbon, and with a noble head—an interesting picture in every sense.

In Gallery IV. Sir Francis Grant has his turn, and we are brought to early Victorian art by his hunting pictures and his portrait of Mrs. Markham walking in the snow (113), which once excited great admiration. How far off it seems now! The portrait of Grant, painted by himself, is almost amusing in its Philistinism. In the next room some early works by Sidney Cooper show that he did not always paint cows like hair trunks. The old artist did himself sad injustice by going on painting after his perception and execution were alike on the wane. Judged by such works as Nos. 124 and 140, his reputation is a solid and lasting one, more so than that of the other two recently deceased academicians who are represented. Among these tame and academic pictures Sam Bough's "Dunkirk Harbour" (125), the work of a painter of strong and original genius, makes its mark in an unmistakable manner. His other picture, "Storm; Bass Rock" (129), is spoiled by a bad and theatrical sea. That was before the advent of the group of English painters who have placed English art at the head of all the world in sea-painting.

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STATUE, DALLINGTON.—An addition has been made to the sculptured reredos in the parish Church of St. Mary, Dallington, in the shape of a new statue for one of the vacant niches. This reredos was designed by Messrs. Law and Harris, architects, of Northampton, with the intention of filling its twelve niches with sculptured figures of the Apostles, which Mr. Harry Hems, of Exeter, was commissioned to carry out. Funds, however, have not permitted the whole series, as yet, to be done, and up till recently eight statues have occupied the niches destined for their respective receptions. These are SS. Peter, John, Paul, Philip, Matthew, James the More, Andrew, and James the Lesser. Another statue has just been placed *in situ*, and it represents St. Thomas, surnamed Didymus.

## NOTES.

**The Registration Meeting at the Institute.**

THE meeting at the Institute last Monday, at which the great question whether registration for architects is desirable or not was to be argued out, resulted in an almost ludicrous anti-climax, the promoters of the resolutions (printed in the first article in our last issue) having apparently taken fright at the last moment and abandoned their first resolution, contenting themselves with a slightly altered second resolution, to the effect that a committee of the Institute and Allied Societies should be formed to consider and report on the desirability of registration. This, of course, commits no one to anything, and was therefore voted for almost unanimously as a *modus vivendi*. Our own feeling is that the promoters of registration ought not to have been allowed to abandon their first resolution. The wish to do so was a notable confession of weakness, and if the resolution had been discussed and not carried the subject would probably have been entirely shelved for a long time to come. We must compliment the president of the Manchester Society on his good-tempered, moderate, and well-expressed speech in seconding the altered resolution, which was listened to with pleasure by all parties; but otherwise we do not think the promoters of the movement did much to recommend it. We may allude to one possibility hinted at by an old member of the Institute in his speech against the movement—that if a Registration Act was passed "he had no doubt about his course." We believe that in such an event a good many eminent architects would refuse altogether to be included in the list, and would simply drop the term of "architect." There is more than one way in which it would be possible to do this and carry on their work just the same. It would be an amusing result if the passing of a Registration Act led to the term "architect" becoming a badge of inferiority!

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**Preservation of Ancient Monuments in India.**

THE bill introduced by Sir Denzil Ibbetson into the Viceroy's Legislative Council empowers the Government to declare that any privately owned ancient monument is a "protected monument," whereupon the owner will be given the option of committing it to the guardianship of a Government official, for maintenance by the State, with free access for the public, or of making some mutually satisfactory arrangement with Government. If neither of those courses is found to be possible, the endowment (if any) attaching to the monument is to be compulsorily applied to its purpose, or, failing compliance therewith, the State will be enabled to acquire the place or structure—provided no part of it is periodically used for religious observances—under the Land Acquisition Act. The bill confers upon the State a right of pre-emption, under certain conditions, as to its purchase by the owner's family or by his own religious association, of any protected monument. The measure extends to antiquities of a movable nature, and to the prohibition or restriction by the Governor-General in Council of the

importation into, or exportation out of, any part of British India of any specified class of antiquities, whenever he has reason to believe that such sale or removal will be to the detriment of India or of any neighbouring country. The term "antiquities" does not cover certain antique or artistic objects, but includes objects having an archæological or historical interest. The bill seeks further to prevent the removal of archæological remains from the vicinity of their site or building, and to restrict or regulate excavations within any local area, subject to the payment of compensation for loss occasioned thereby.

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Sir Oliver Lodge on Radium.

IN the lecture delivered at Birmingham on Tuesday last, Sir Oliver Lodge presented an excellent account of the development of knowledge relative to radium and allied substances, which may be particularly commended to all who have not found time to follow recent literature on the subject. One admirable feature of this latest utterance was that the lecturer discouraged the wild theories started by some imaginative writers, who have professed to find in radium a substance making perpetual motion possible, abolishing the law of the conservation of energy, and revolutionising the first principles of science. Although the results of recent investigations compel us to modify some general assumptions that were made a quarter of a century or more ago, and until lately have been acted upon by scientists, it is probably correct on the whole to say that the most modern revelations tend less to upset than to elucidate previous conceptions. Perhaps the most remarkable lesson taught is that atoms of matter are not permanent, as formerly believed. Still, so far as concerns the ephemeral purposes of man, all ordinary substances behave as if their constituent atoms were actually permanent, and the secrets revealed to the most advanced scientists do not now, and may never, affect the practice of those engaged in technical pursuits. In the succession of theoretical and experimental investigations so lucidly described by Sir Oliver Lodge, it is interesting to observe a statement of the opinion that our present idea of the atom is largely due to Professors Larmor and Thomson, who demonstrated the existence of electricity in the form of small particles, or electrons, of which we now believe atoms of matter to be constituted. These atoms are crumbling and decaying, for nothing material is permanent. As for the further question whether they must not also be forming and coming to the birth, Sir Oliver Lodge tells us this is the next thing to be looked for.

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American Iron and Steel Industries.

LESS than 150 years ago a small detachment of British and Colonial troops worked their way through the dense forests lining the banks of the Monongahela River, the objective point of the expedition being a small French fort, one of a series intended to check the westward development of the British Colonies. To-day this small fort, or rather its immediate successor, rescued from destruction and preserved by the munificence of a local archæological society, is hidden away among the back streets of Pittsburg, one of the greatest centres of the iron and steel industry. For many miles along the banks of the river, where the Colonial expedition laboriously cut its way through the woods, is to be found the most extensive collection of cooking ovens, blast furnaces, and rolling mills in the world. It is interesting also to recall the fact that in the year 1786 the modest sum of 300*l.* was lent by the Legislature to a Mr. Humphreys for the purpose of enabling him to make steel "as good as in England." From this small beginning the iron and steel industries of the United States have grown, slowly at first, but with increasing rapidity as years rolled on, until, having passed the records attained in Great Britain, the enormous output of 15,878,354 tons was attained in 1901, while in the following year the total of 17,821,307 tons was reached. Notwithstanding this enormous production of iron and steel, the home demand in the United States is so great that during the last year or two it has been necessary to purchase large quantities of these metals from foreign manufacturers to supply the deficit.

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Running Powers on Tramways.

SO FAR, scarcely any attempt has been made to deal with the question of running powers as applied to tramways. In railway practice transference of traffic is a matter of absolute necessity, and, owing to the universal adoption of a standard gauge, is perfectly easy of accomplishment. But until recently the system has been regarded as distinctly inadvisable in tramway working. At the present time, however, there are reasons for believing that municipal and other tramway owners will be compelled to consider the interchange of traffic, either by the transfer of passengers or of vehicles, and the regulation of rates and through fares. There is already a demand on the part of the travelling public for through rates and facilities, without the inconvenience and loss of time attendant upon the duplication of fares or upon a change of cars, and there is no doubt whatever that this demand will increase as time goes by. From the point of view of the tramway owner there are certainly difficulties in the way, but at the same time these ought not to be insuperable, and we are glad to learn that the Tramways and Light Railways Association have already had the question under discussion, and now propose to appoint a representative committee to consider the best method of arriving at a practicable scheme likely to be generally acceptable.

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The New East River Bridge, New York.

LAST month the new means of communication between Brooklyn and New York, known as the Williamsburg Bridge, was formally opened. This structure, if not the most handsome, is the largest suspension bridge hitherto erected, and spans the East River between Delancey-street, Manhattan, and South Fifth and South Sixth streets, Brooklyn, having a total length of 7,200 ft. The foundations of the towers are formed by timber and concrete caissons sunk to rock level. Above these solid masonry piers, two for each tower, are carried up to 25ft. above high-water level, and masonry pedestal blocks of granite are laid upon the piers to form footings for the four legs of the towers. The towers themselves consist of four legs strongly braced together, the two towers at each end of the bridge being connected in pairs by transverse trusses and diagonal ties. The tops of the piers rise to an elevation of 335 ft. above the river and 442 ft. above the lowest foundation level. The main span, 1,600 ft. clear, is carried by four 18 in. steel wire cables, extending inshore nearly 600 ft., where they are secured by masonry anchorages. Provision is made for stiffening the floor of the bridge by two continuous lattice girders, 40 ft. in depth, and of great solidity, while at intervals plate girder beams, extending across the floor, are riveted to the trusses. In respect of accommodation for traffic, the Williamsburg Bridge far surpasses any other structure of the kind, the roadway being double-decked, and the total width of thoroughfare amounting to 150 ft. The provision for traffic includes two tracks for elevated cars, four tracks for street railway cars, two 18 ft. roadways, two tracks for bicyclists, and two broad footpaths. The completion of the new bridge will undoubtedly be a great boon to the inhabitants of greater New York.

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A Steam Pipe Explosion.

FROM the Board of Trade report recently issued relative to the explosion, in August last, from two cast-iron tee-pieces at the Brompton and Kensington Electric Lighting Station, we gather that water-hammer action was the cause of the accident. The pipe system was provided with drain valves and pipes, but one of these which was thought to be open at the time of the explosion was afterwards found to be shut, and the other was found to be choked. It appears that the open ends of the drain pipes discharged into a hot well, and were out of sight of the attendants. This is a very inadvisable arrangement, as the attendant who regulates the valves is unable to see whether they are acting or not. Similar conditions have frequently existed in previous explosions of similar character, and the point is one worthy of note. Another point of importance in connexion with steam mains is that the fitting of back-pressure valves on steam traps creates conditions favourable to the formation of a partial vacuum and the accumulation of water in the pipes, if steam leaks past the main stop valves. The presence of water at a temperature lower than that of the steam admitted to a pipe is always liable to cause an explosion if the steam is turned on too quickly. Cast-iron fittings are very convenient no doubt, but in our opinion wrought steel should invariably be used for high pressure steam.

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The Destruction of Country Houses by Fire.

THERE has been an unusual destruction of important country houses by fire during the present winter. The two latest to be destroyed were Hanley Castle, Worcestershire, and Earls Barton Grange,

Northamptonshire. Unfortunately these and kindred fires have not only destroyed the buildings, but also valuable artistic and literary contents. The pictures in the country houses of England are priceless; no insurance can compensate for the loss of a fine Reynolds or Gainsborough—they cannot be replaced. It is, therefore, very surprising that the wealthy owners of large country houses do not have better water supply and better means of extinguishing fires at hand. The inmates of Earls Barton Grange were sleeping quietly while the fire was raging, showing the need in large houses for some kind of watchman. To what extent modern systems of heating and lighting are responsible for country house fires it is impossible to say without a careful investigation of the facts of each case, but there can be little doubt that improvements are frequently made in these respects in old houses without sufficient regard to the character of the building. On the other hand, many serious fires are the results of small causes produced by the want of care of the inmates. In large country houses a responsible person should make an inspection of the house at midnight, and insurance companies should have the heating and lighting apparatus and its surroundings viewed from time to time by a competent official.

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Plympton Grammar School.

CONSEQUENT upon the disestablishment of the Grammar School at Plympton St. Maurice, in Devonshire, the buildings, which present an uncommon example of seventeenth century architecture after the Gothic manner, will soon be vacated, and some apprehension is felt that the site will be cleared. The main portion of the fabric stands upon an open colonnade, having a flat ceiling; the outer walls are constructed of granite and limestone laid in courses. A sum of 2,000*l.* was expended upon a general repair thirty-three years ago. The adjacent parsonage house, the birthplace of Sir Joshua Reynolds, has been demolished. A proposal is made to save the present buildings from the same fate by converting them for the purposes of a local library and reading-room. The Grammar School was founded and endowed in 1658-60 by Elizeus Hele; Sir John Maynard, a trustee of the Hele Charity estate, built the schoolhouse in 1664. It was there that Sir Joshua, whose father, the Reverend Samuel Reynolds, was headmaster, received his education. Amongst other distinguished pupils were Sir Charles Lock Eastlake, P.R.A., who afterwards went to Charterhouse; James Northcote, R.A., and Benjamin Robert Haydon; all townsmen of Plymouth.

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Landscape Exhibition, Dudley Gallery.

ONCE more the interesting exhibition of six associated landscape painters comes round at the Dudley Gallery; an exhibition which serves, among other things, to illustrate the important influence of personal style and temperament on the artistic interpretation of Nature. As we go from one set of pictures to another—from Mr. Allan to Sir E. Waterlow, and from him to Mr. Peppercorn—we seem to be in different worlds, and those who think landscape painting is the imitation of Nature might have their eyes opened in this small gallery with its fifty-one pictures. Mr. Allan's works do not represent his usual style; his largest picture, "Far Among the Hills," is a rather melancholy landscape in which the successive ranges of hills have a fine effect of air and distance. He shows us, too, Siena, a pearly-grey silhouette that crowns a hill, and "The Arrival of the Fishing Fleet" at a northern port, a fine coast picture. With Sir E. Waterlow we are in a land of comparatively warm colour, and meet with a style which, though still broad, is more imitative than Mr. Allan's. The "Gorge d'Aprémont, Fontainebleau," is a little ragged in composition; the finest of the set is "A Suffolk Common." Mr. Peppercorn is a painter of half-seen landscape, as in his largest and best work, "Twilight," a kind of landscape art which strikes one as rather easy, and in some of his smaller paintings there is a roughness and absence of intelligible definition which amounts to an affectation. Mr. Aumonier has ten pictures, of which "On the Fell Side" is the best; his largest work, "A Ford on the Chelmer," approaches a little nearer to the commonplaces of landscape painting than the smaller pictures. With Mr. Mark Fisher's collection we are in a world of glittering lights and spots of colour; his largest picture, "An Essex Height," shows a splendid sky. Perhaps his very marked style interposes a little too much of the artist's personality between us and Nature, though it is always intellectually interesting; and "By the Pond" shows that a style suitable for the treatment of foliage and meadow and pond is not so suitable to the treatment of the nude figure. Mr. Leslie Thomson's works are more in the *juste milieu*, and are not the most powerful, though to many they would be the most pleasing, and his view of "Lindisfarne," with the river shimmering in the flat landscape and the wide expanse of sky above, is a real picture:

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Water-colours by Thomas Collier.

THE collection of nearly a hundred water-colour drawings by the late Thomas Collier at the Leicester Galleries forms one of the most interesting and satisfactory exhibitions now open. Collier, who died twelve years ago, at the comparatively early age of fifty-one, was one of the best representatives of that broad and genuine school of water-colour art of which David Cox was the acknowledged head; but it may be doubted whether Collier, especially considering the comparative limits of his artistic life, was not fully as gifted an artist as Cox; he was at all events quite as true and sound in his method and his aims. He knew that his medium was essentially one for broad washes and not for niggling bits of detail; and, as Mr. Wedmore says in his excellent critical preface to the catalogue, "he painted not so much places as the spirit of places; and not so much the spirit of the place as the mood of the particular hour. He painted Weather." And all his landscapes are filled with this spirit of open-air breadth and freshness. He did not require a scene of special beauty or picturesqueness to produce a striking picture; an open heath and an open sky were enough for him; witness such works in this collection as "Cannock Chase" (35), "On the Sussex Downs" (38), "A Heath Scene" (46), and, finest of all, "A Sussex Common" (48). These are among the examples in which he made a fine picture out of the simplest materials; but he was equally fine and broad in style in treating such exceptional scenes as "Arundel Park" (33), and "Bamborough Castle" (80). On one of the walls in the room is a row of small sketches—75, 78, 81, 84, etc.—in each of which the sky is quite a study. It was a happy thought to collect together so many of the works of one who, though working mostly on a small scale, was a great landscape artist; and all who are interested in the best school of English water-colour art should pay a visit to the gallery.

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## MAGAZINES AND REVIEWS.

THE *Burlington Magazine* contains an article on Cotman which deals especially with his paintings of subjects in which buildings form the prominent material of the picture; we can hardly call them "architectural" subjects in the usual sense of the word, as they deal mainly with old and dilapidated buildings which are rather picturesque than architectural. His "South Gate, Yarmouth," which is in the collection of Mr. Arthur Samuel, is a masterpiece in its way, with which we were not previously acquainted; the broad treatment of light and shadow in it is remarkable. Two other examples are given: a sketch of "Buildings by a River," in the possession of Mr. W. B. Patterson, and "An Old House at St. Albans," in the possession of the Fine Art Society. These, though less important subjects, are equally fine in their way, and are reproduced in very fine plates. This is a side of Cotman's work which is less familiar than his landscapes and marine pictures, and we are very glad to have it so well illustrated. The article, written by Mr. J. C. Holmes, is occupied partly with the question of the authenticity of some of the works attributed to Cotman, and with observations on the characteristics of his style and technique which should be looked for as a test of the genuine character of the work. Generally speaking, Cotman is one of the most unmistakable of painters, so strongly individual is his style; but it would appear that he has not escaped the devices of the imitator. Among the other articles in the number is the first part of an article by Mrs. F. Nevill Jackson on "Ecclesiastical Lace, Ancient and Modern," accompanied by some splendidly executed illustrations. The most important critical article in the number is that by Mr. W. H. James Weale—"Popular Opinions Concerning the Van Eycks Examined"; an attempt to arrive at true conclusions in regard to the right attribution of various works to the two brothers or to their followers and imitators; but we have not space to follow out the argument here.

The *Art Journal*, which has come out in a new green and red cover of the *art nouveau* type—not an improvement on its former outside—devotes an article to the works of Mr. John Lavery, whose paintings, from their broad style, come out very effectively in black and white reproduction. In an article on "A Roundel by Pietro Torrigiano," Mr. Claude Phillips gives at length the reasons for his attribution to Torrigiano of a medallion head of Christ in a circular decorative frame, which is in the Wallace collection, and suggests that this may have been the crowning detail of one of the mural tombs planned and partly carved out by Torrigiano during his stay in England. The position and the character of the head of Christ, in the tomb by Torrigiano now in the Record Office, of which an illustration is given, certainly lend a great deal of probability to this suggestion. Mr. Rimbault Dibdin contributes the first of a series of articles on "The Art Annals of Liverpool," which are of more importance and significance than is generally known. The first article is chiefly devoted to the work of that powerful

though rather sensational animal painter, G. Stubbs, a very remarkable artist in his way.

In the *Magazine of Art* Mr. Aylmer Vallance, in continuing the subject of "Furnishing and Decoration of the House," deals with the treatment of the drawing-room. He is satirical, and not without some reason, in regard to the elegant rubbish (or what is supposed to be elegant) which ladies are fond of strewing about this room which is more especially their province; though this evil, it must be added, is not so widespread and pervading as it used to be. The prejudice against admitting oil-paintings into a drawing-room, which the author thinks not entirely unreasonable, depends entirely on the kind of drawing-room. If the room is one which is furnished and decorated in light colours and with a predominating character of grace rather than sobriety in the furniture, oil-paintings are out of place in it; they are too deep and strong in colour for their surroundings. It is not to be assumed, however, that this kind of gay and bright treatment is the only one suitable for a drawing-room. There are many ways of treating a drawing-room, from the light fantastic style to the severe and subdued style; which is right for any particular house will depend a good deal on the character of the house itself; one might even add, on the character of the inmates. The drawing-room is especially the setting for the lady of the house. A young married lady with a love of society will not unnaturally like a bright and gay character in the room which is her reception-room, and will herself look best in such a room (a very important consideration!); a more mature lady with a taste for art or literature will naturally not wish for the setting suitable to the "social butterfly," nor will she seem at home in it. Nor should the lady of severer tastes despise the social butterfly and her pretty though perhaps rather flimsy drawing-room surroundings; she represents one form of life. What is always to be remembered, however, is that, taking the house as a whole, the drawing-room should be in a lighter key and less severe in style than the dining-room. It is the room of recreation and enjoyment, and should express that character, in a comparative sense at all events. A drawing-room decoration which is light enough in character for one house might appear too grave in another house of which the general character is different. Something depends, for instance, on the staircase; where the drawing-room, as in most town houses, is upstairs. If we approach by a staircase winding in a graceful curve, as in so many London houses of the Adam date, we expect it to lead to a room where grace is the prevailing note. If we ascend a wide and rather monumental staircase laid out on severe rectangular lines, a proportionate degree of severity in the decoration of the drawing-room will not surprise us. Mr. Vallance seems practically to admit a very wide range in the treatment of the drawing-room, to judge from his selection of illustrations; one of which, the lower one, page 113, designed by Mr. G. M. Ellwood, does not strike us as being like a drawing-room at all; it is too sombre in effect and too rigid in line. A drawing-room, whatever else it is, should never be sombre; that character is only fitted for the dining-room. The room by Mr. G. Logan, page 115, is also too sombre in effect; it may be partly the exaggeration of the photograph, but we do not think dark wood wainscotting suitable for a drawing-room. Of the brighter schemes given, none, we admit, are in quite as good taste as to style of detail as these two, with the exception of the drawing-room in the Adam style (page 116), executed by Messrs. Gill and Reigate. That has precisely the character of a drawing-room—bright, cheerful, and graceful, and in perfectly good and restrained taste. The rest of the examples we do not care much for, and the one said to be in the "modern" style, designed, we regret to see, by an architect, is simply detestable; one could not live in such a room. Under the heading "Modern British Etchers" a member of the Society of Painter-Etchers writes a rhapsody on the etchings of Mr. Frank Brangwyn, which are very fine and original, but the writer would have done better justice to his subject by being less ecstatic and exaggerated in his eulogies, which are calculated to arouse a spirit of contradiction in the reader, and we should think could hardly be very pleasing to the subject of them. However, some artists will digest a great deal of praise. Among other interesting articles in the number is one on "Bohemia—A New Country for the Artist," by Mr. Val Prinsep—the literal Bohemia, that is, not the figurative one with which artists are supposed to be so especially familiar; and one on the decorative work of Professor Gerald Moira, which well deserves recognition, but here again we find that tendency to adulation which is the besetting sin of critics in writing about their favourite artists. Professor Herkomer continues his interesting and instructive essay on "How Portraits are Painted." He devotes a good deal of space in this issue to the question how far photography is of any use as an assistance to the portrait-painter, and the caution which should be exercised in making use of it. This essay is full of interest to the general reader, besides containing valuable suggestions for young painters who have their experience to gain.

The *Berliner Architektur-Welt* contains a series of very interesting competition designs for an erection on a canal lock at Machnower, which we take to be, from the drawings, a mill beside the lock, driven by the sluice water. The first premiated design, by Herr F. Lahrs, of Charlottenburg, is shown in a pretty chromo-lithograph illustration which forms the frontispiece to the number. It shows a long, irregular, mill-like building with high roofs, connected at one end with an annexe which stretches across the canal at right angles to the main building, with a lofty arch where the canal runs under it; on the right is a kind of tower formed of plain masses of masonry, between which the canal runs, and which carry a timber gallery or shed at the top. As an example of the picturesque of homely construction it is admirable; and some of the other designs illustrated are very picturesque. We understand that the locks and weirs on the Berlin canal system are being reconstructed and the buildings connected with them architecturally treated; and if they are all done as well as this the result will be very satisfactory. Among the other contents of the number are a large apartment-house in the Ludwig-kirchplatz, Wilmersdorf (Berlin), by Herr Cartobius, of effective though rather restless design; a terrible piece of confectionery in the shape of an apartment-house in the Lindenstrasse; a sculptured fountain on the Lützowplatz, apparently symbolising the labours of Hercules, with a good deal of "robustious" vigour about it; various sketches of interior decoration, and a dreadful kind of ornamental area-railing, the stone curb rising up in curves which are followed by the iron-work. It is calculated to frighten away burglars of æsthetic taste, at all events.

In the *Monthly Review* there is a very interesting article by Mr. John Ward, F.S.A., giving an account, from personal inspection, of the work which has been going on for three or four years back, under the direction of Mr. Legrain, in ensuring against further destruction the columns of the Hypostyle Hall at Karnac. In the case of a good many of the columns, an entirely new artificial foundation of steel and concrete has been formed, giving them a firm base which will not be disintegrated by the Nile water. We are told that the bed of the Nile, in consequence of the immense amount of deposit from its waters, has been gradually elevated some 20 ft. above what it was when the temples were founded; hence the periodical flooding of the bases of the columns at high Nile, which has wrought such mischief. It is satisfactory to learn that such careful measures are being taken, under English rule, to preserve this great architectural monument.

In the *National Review* Sir Henry Le Marchant, Director of the London and India Docks Company, writes a long article on "The Port of London Bill," which deals almost exclusively, however, with the administrative side of the question. The real point of the article is that, as far as public interests are concerned, the Port of London will be better and more economically worked by the existing Dock Companies in regard to docking work, retaining the Thames Conservancy, with an amended constitution, to preside over the business of deepening and maintaining the channels, governing and regulating the navigation, removing wrecks, etc. In fact, he wishes that, as near as possible, the *status quo* should be maintained. The further advantages promised are summed up as follows:

"It is generally acknowledged that under whatever control the docks may be, a larger income is needed to provide for the future requirements of the port and the deepening of the river.

Our proposal, therefore, is that all goods entering the port (except coal, coastwise goods, and transhipment goods) should, as at all other ports except Hull, pay dues for the accommodation they receive. The dues on goods discharged in the river should be paid to the river authority, thus giving them the funds for deepening and maintaining the river. The dues on goods discharged in the docks should be paid to the Dock Companies interested. In return for the increase of income, the London and India Docks Company would be prepared—

(1) To spend at once the sum of 2,000,000*l.* on new dock works.

(2) To limit their dividends on the capital stocks to 4 per cent. per annum. (They paid this dividend in 1902.)

(3) To consent to the reduction of the dues on shipping from 1s. 6d. to 1s. per ton, thereby giving up some 110,000*l.* a year.

(4) To consent to the Board of Trade having power to compel the Dock Companies to carry out necessary dock improvements or to veto any improvements they do not approve of.

(5) To consent to the Railway Commissioners being the judges as to the reasonableness of dock charges other than those authorised by statute."

The all-important question, however, of the maintenance of the channel, is not much considered in the article. It is for this more than anything else that a strong central authority is required, with adequate engineering advice and powers of action. If the access to the Port of London becomes silted up, as has been the case with more than one great port in past history, administrative regulations will be only waste paper.

The *Century* contains an article by Mme. Curie on "Radium and Radio-activity." This is going to the fountain-head, and the article by the principal discoverer or developer of radium will, no doubt, be largely read, though all that it has to tell scientific men is already known. It is accompanied by a more popular illustrated article on the same subject by Mr. Ernest Merritt, Professor of Physics in Cornell University. The frontispiece to the number is an engraving by Mr. Timothy Cole of Murillo's "St. Joseph and the Infant Jesus," a perfectly beautiful piece of manipulation of the texture of wood engraving. We may also direct attention to an illustrated article on "An American Palace of Art." This house, of which we now hear for the first time, is Fenway Court, standing on a drive called the Fenway, outside Boston the region apparently, as its name implies, being reclaimed fen land. The house was built by an American millionairess (if one may use the word), Mrs. Gardner, to be a home for her art collections and itself an artistic palace; we gather that it is now practically open to the public, with little restriction, as a privately collected art-museum. The house seems rather an architectural *mélange*; we are informed that the owner was her own architect, and one knows pretty well what that means; but the house seems to be a treasury of works of art imported from Europe, including an ancient Roman pavement which occupies what in America is called the "center" of the court round which the house is built. We should have preferred a more balanced and homogeneous piece of architecture as the setting for an art collection, but the Boston people seem exceedingly delighted with it, to judge by Mr. Sylvester Baxter's article, in which "serene beauty" and "supreme joy" and other ecstatic expressions abound.

*Scribner* contains an article by Mr. M. H. Spielmann on the work of Mr. Brangwyn, whom art critics seem to vie with each other in extolling at present. He is a remarkable artist, but we confess that we have not yet succeeded in seeing quite so much in his pictures as it is becoming the fashion to see. Power of colour and originality of design there generally is, but surely rather a lack of beauty. But then mere beauty counts for so little in art nowadays! Under "The Field of Art" a quintet of five writers join in a kind of symposium over an artist named Alfred Quinton Collins, whose fame has not, we think, crossed the Atlantic as yet. To judge from the expressions used, "Alfred Q. Collins" must have been an apostle specially sent into the world to enlighten the human race on the subject of art. We are told that his ideas on the study and practice of painting "are of the utmost importance to the world. . . He believed that the expression of an idea in art is a science which can be taught by one person to another as definitely as any purely scientific study. . . . Early in his career Collins set himself the task of finding out the laws that govern the practice of painting (including the laws of optics), of formulating them, and then putting them in logical sequence so as to develop a set process." It seems difficult to credit one's eyes in reading such remarks. Are the people who write them serious in imagining that any great art was ever produced in this analytic fashion? It is like going back a half-century in American criticism, when we were told that some American composer, whose name is now forgotten, was intending to produce symphonies

far exceeding those of Beethoven, because they would be based on the influence of the gigantic scenery of his native country. It is really extraordinary that American critics cannot perceive how absurd this spread-eagle kind of writing is in the eyes of sober people.

The *Antiquary* includes an important article by the Rev. J. B. McGovern on "The Chi-Rho Monogram," tracing this symbol from its Pagan origin to its adapted use as a Christian symbol.

We regret to learn that *Knowledge* disappears, after this month's number, as a separate publication. It is to be incorporated with the *Illustrated Scientific News*. The first number of the newly-incorporated journal will take the place of the February issues of each magazine; in size and shape it will follow *Knowledge*, but its contents will comprise the main features of both journals. The present and last issue of *Knowledge* contains an article by Miss Clerke on "World-building out of Meteorites" (No. vi. of "Modern Cosmogonics"); but, in spite of its title, the article seems rather to tend to the conclusion that out of meteorite swarms nothing is or can be made. "Jupiter and his Surface Currents" is the subject of an article by the Rev. T. E. R. Philips, accompanied by a sheet of fine illustrations of recent aspects of the great planet. Mr. Philips upholds the theory that the whole globe of Jupiter is still in an intensely heated semi-molten condition, and concludes, "in the constant agitation of his heated globe we catch a glimpse, though on a giant scale, of our own world in the dim recesses of the past."

The *Gentleman's Magazine* contains an article by Mr. Cuthbert Hadden, half literary, half historic, on "The Curfew Bell," which may interest those to whom old customs are dear. The manner in which this originally merely practical institution has survived in many English villages for nearly a thousand years, and is now kept up for purely sentimental reasons, is a curious instance of the spirit with which, amid all the stir of modern life, we cling to relics of the ways of ancient England.

## A NORTH BORDER TOWN:

### By an Inhabitant of it.

When anything is lost in our town we send the crier round to tell all the inhabitants, and offer a reward to anyone who may find the missing article and restore it to the owner. Also, when there is a sale of furniture, or a large supply of rabbits, or a lecture, the crier is sent round with announcements of the fact. It is the business of this functionary, moreover, to ring the town hall bell at six in the morning and again at eight in the evening. This prevents any mistake in the time by reason of diversities in clocks; and the eight o'clock bell has the interest of being a survivor of the curfew.

When any of us wish for a conveyance for the purpose of arriving comfortably at a ball or party or place of entertainment, we send for the omnibus, for we have no cabs nor cabstands. Up it comes to our doors, and we sit in solitary state in the cumbrous vehicle, and arrive at our destination in due course, a double fare being charged for the accommodation after a reasonable hour (which sometimes happens to be nine o'clock).

Fishwives come to our doors, too, with creels of fish, either on their backs or under their arms. One of them remarked a few mornings ago that a codling she was offering for sale was nearly as big as a "hippo-taymous." In the season herrings are hawked about the town by men in carts, who call out with loud and strident voices "live and loupin'."

Some of the mothers among us, by way of threatening to box their children's ears, declare they will "skelp their lugs"; and, instead of the scriptural rod, they use "taws" for thrashing their youngsters, which implement is a leather strap cut into a fringe at one end.

People do not take walks in our town, they "get a walk"; and they do not play, but "get themselves played." If they take in a magazine they say they "take it out." If the kettle is upset, it is "cowped"; and if the down-draught of a chimney is disagreeable, or there is borrowed smoke, those inconvenienced by it say they are "scumfished." We are in the same confusion as to the use of "will" and "shall" as they are across the border. When a book entertains us very much we say it is "ridiculous."

What is generally known as "next Monday," or "next Tuesday," we know as "Monday first" or "Tuesday first." Next Monday or Tuesday with us is the one that comes round after Monday or Tuesday first. A south-country family recently hired apartments for a next Monday, and duly arrived with luggage, children, and maids. The landlady confronted the large party at the door with a look of horror. "You've made a mistake in the day," she cried, "the other lodgers are still here." The arrivals explained they had arranged to come next Monday and this was the next Monday. "Oh, no!" she declared, "this is Monday first; next Monday will not be here for a week; and every room is occupied."

We sell our ale by the gill, which is the same as half a pint. You can have one gill, or two gills, or three gills. Pins are usually sold at the grocers' and ironmongers' shops, though drapers are now beginning to keep them "in stock." On market-days the usual concourse of cattle and sheep is occasionally diversified with a flock of goats or a number of donkeys, and still more rarely a large white company of geese waddles in. On the west side of the market-place is the town hall, furnished with a clock tower, finished by five pennon vanes. One of the inns close by has a mounting block on the pavement by the doorway for the use of equestrians, and behind it are rows of stables belonging to the days when accommodation was required for strings of packhorses. Our assembly-rooms are in the market-place, too, over a double row of back-to-back butchers' shops, with an arcaded covered walk on both sides.

We have a good deal of what the Japanese call "social glue." We stand by each other very well; laughing at little foibles, and overlooking the consequences of an extra "gill" in silence or at the most with a shake of the head. We shut up our shops several times in the course of the year, as well as at Christmas, the New Year, and Good Friday. On Easter Monday, for instance, the shops are closed all day. The children betake themselves to a wide pasture down by the river's edge with as many dyed and hard-boiled eggs as they can get, or have been given to them, and play about—tossing and bowling them till they are broken, when they eat them and leave their shells of many colours on the grass as a feast for the crows. The shops are also shut on the afternoon of Easter Tuesday, when the servant lasses and other grown-up young people also resort to the same pasture or meadow, and take part in various games till nightfall, when, hand-in-hand and singing "Auld Lang Syne," they return to the town. On Shrove Tuesday the shops are closed in the afternoon, and many of the inhabitants proceed to the pasture above-mentioned, either to be spectators of a football game or to take part in it. This is played between the bachelors and married men, or between residents in the two parishes into which the town is divided. Then we have a September holiday, as well as the general Bank holiday.

We have several kinds of fairs—March and November fairs for hiring "hinds and herds"; one in May, and another in November for single servants; two for horses and cattle, and a lamb and wool fair in July, when our streets are blocked with country folks and the market-place is full of swings, stalls, merry-go-rounds, shooting galleries, and exhibitions of various kinds, accompanied by powerful music. Our July fair is still ceremoniously observed as in the days of yore, when the Scots had to be taken into account. We have an annual flower show, too, and an occasional agricultural show; and on all these days the town is filled with crowds of happy, hearty, well-behaved, and well-dressed people from neighbouring villages. Every Saturday most of these villages still send carriers' carts to the town to bring consignments and take away requisites.

As the old order changes every day, it may be added to these notes that we have our "self-help" men, geologists and botanists, our Hans Sachs, our clever workers in iron and other metals, our artist who paints our wild cattle on their misty hills with appealing truthfulness, another clever at portraits, and a considerable amount of local talent of various other kinds; but we excel most, as becomes a border population and the influence of heredity, in the skill of our volunteers. Time after time our young men have brought back prizes (from Wimbledon, Shoeburyness, and elsewhere), and one of their officers now holds a champion cup as large as the tea urns the poet laureate has mentioned to us. Our bee-keepers, too, carry off many prizes from distant shows for the honey garnered on our breezy moors.

We have an ancient church, with a beacon turret at one end and a massive fifteenth-century tower at the other, and a modern church for a portion of the town made into a new parish; and we have chapels for nearly every denomination of dissent, including barracks for the Salvation Army. Four hundred years ago our town was walled round with a great stone wall. This is now removed, all but two of its gateways, which contribute to the border characteristics. And close by, looking down upon "the modern" with supreme indifference, stands the grand castle that was formerly the great strength of this part of the country, and was all in all to the kings, knights, squires, dames, servitors, troubadours, and jongleurs who passed in and out of its cavernous archways in the days of yore.

S. W.

## WATER SUPPLY SYSTEM AT SALISBURY HOUSE.

Occupying an extensive site in Finsbury, with frontages on Moorgate-street, London-wall, and Finsbury-circus, Salisbury House is one of the largest office buildings hitherto erected in the metropolis. When originally completed the building was furnished with water from the mains of the New River Company, but, as usual in the case of large office and warehouse buildings in the city, it was found that the charges of the water company were very far in excess of the actual value of the water used. Even at the reduced rate the water company were receiving about 800*l.* per annum, which, in view of the comparatively small amount of water used, was considered by the proprietors of the building to be an unjustifiable expense. Consequently inquiry was made as to the possibility of procuring water from some independent source, with the result that the building is now supplied from two artesian wells at a cost which it is estimated will not exceed one-half the amount previously paid to the water company.

The installation is in duplicate, and consists of two artesian wells, specially-designed borehole pumps driven by electric motors, electrically driven circulating pumps, two large storage tanks on the roof of the building, and the necessary pipes in connection therewith. The boreholes are of 7¼ in. internal diameter, lined with steel tubes connected with screwed steel sockets, and are sunk from the floor of the pump-room to a total depth of 450 ft., passing through the strata shown in the subjoined table.

Strata encountered in Sinking Wells at Salisbury House.

| | Ft. |
|---|---|
| Grey ballast | 3 |
| Dark grey clay | 36 |
| Dark grey clay and stones | 24 |
| Grey sand and mottled clay | 2 |
| Dark grey clay | 47 |
| Mottled clay | 31 |
| Mottled clay and hard pebbles | 3 |
| Green sand and pebbles | 17 |
| Hard grey sand | 11 |
| Live grey sand | 28 |
| Black pebbles | 2 |
| Chalk and flints | 246 |
| Total | 450 |

The normal water level is at present situated 140 ft. below the floor of the pump-room, and the pumps are fixed at a depth of 240 ft., being submerged 100 ft. below the level of the water.

It is well known that the permanent water levels in the London basin have been falling steadily for many years past, owing to modern systems of drainage and the extensive pumping operations of various water companies and the owners of private wells. In places where 100 years ago the water when tapped would rise to the surface and overflow, the level is now fully 100 ft. below ordnance datum. In the year 1850 the permanent levels were depressed from 50 ft. and 60 ft., and, at that time, the level was falling at the rate of 1 ft. per annum. In 1893 the fall was variously estimated at between 12 in. and 18 in. per annum, and it is quite certain that the depression is not less than 1 ft. per annum at the present time. In view of these facts, it will be seen that the engineers responsible for the installation at Salisbury House have acted wisely in carrying the boreholes to a considerably greater depth than that demanded by existing requirements, and in placing the pumps at such a depth that it will not be necessary to alter their position for many years to come, if at all. In fact, the plant is designed so that it may be in every way serviceable for the next century at least.

Below the valve of each borehole pump 30 ft. of 4 in. suction pipe is provided. The pump

buckets and plungers are 5¾ in. diameter, and the rising mains above the gunmetal pump barrels are of 6 in. diameter steel tube. The plunger rods between the pumps in the tubes and the connecting rods attached to the mechanism above ground are of steel, 1¼ in. diameter, provided at suitable intervals with gunmetal guides, secured by means of back nuts. The crossheads work in the guides of cast-iron hanging frames, secured to the under side of a steel girder extending from wall to wall of the pump-room. Above the latter are fixed two sets of mechanism for driving the pumps, each consisting of a frame carrying a disc crank and worm gear. The cranks are carefully balanced, and are actuated, through the worm gear, from direct-coupled 18-h.p. continuous-current motors running at about 850 revolutions per minute. The gears are provided with double-threaded machine-cut worms, 1¼ in. pitch, with a speed reduction of thirty-eight to one, so that the pumps run at about twenty-two revolutions per minute.

The delivery pipes from the main pumps are of 4 in. internal diameter, being coupled together and connected with the rising main proceeding to the storage tanks at the top of the building. Each pump is capable of delivering 3,000 gallons per hour, and, as the combined capacity of the tanks is 30,000 gallons, they could be filled by either of the two pumps in about ten hours. In practice, however, the tanks are never entirely emptied, and it is found that pumping from four to five hours daily is sufficient for all the requirements of the building. The storage tanks are of cast iron, and are situated at a height of 100 ft. above the pump-room level, so that an ample head of water is maintained in the service main and branches to the various draw-off taps. The two tanks are coupled by means of piping, so as to virtually form one tank, and we may add that an alternative connexion is maintained with the mains of the New River Company for use in case of emergency. An overflow pipe is provided for each tank, and the two overflow pipes are joined into one main carried down to a low-level tank in the pump-room.

The circulating pumps previously mentioned are also in duplicate, and are of the three-throw type, with 5 in. diameter plungers, driven by direct-coupled 5-h.p. continuous-current motors running at 1,000 revolutions per minute. The whole of the pump gear is machine-cut and fitted with rawhide pinions for the purpose of insuring silent working, and, as the speed reduction is twenty-six to one, the circulating pumps run at nearly forty revolutions per minute. These pumps run very smoothly, and appear to be well designed in every respect, the discharge of each being 3,000 gallons per hour. The pumps can be used for returning any overflow water to the high-level tanks, and, as the water is delivered through a separate rising main, the pumps can be employed for circulating the entire body of water in the main storage tanks, if required, for the purpose of avoiding stagnation.

A complete and conveniently-arranged switch-board, with all the instruments necessary for control of the plant, is erected between the two main pumps in the pump-room, and the current used is obtained from the mains of the City of London Electric Company at a pressure of 400 volts. The entire installation was designed and carried out by Messrs. Alfred Williams and Co., of Bow, and we learn from the director of Salisbury House that the plant has in every way fulfilled his expectations.

## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The fifth general meeting (business) of the Royal Institute of British Architects for the present session was held on Monday at No. 9, Conduit-street, Regent-street, Mr. Aston Webb, R.A., President, in the chair. Seventy-four Fellows (including twenty-five members of the Council), eighty-two Associates (including three members of the Council), and two Hon. Associates, were present.

Mr. Alex. Graham, the Hon. Secretary, announced the decease of William Pain, elected Associate 1869, Fellow 1875, and Walter Simpson McClelland, formerly of Jannagar, Bombay, elected Fellow 1891. It was resolved that a message of condolence be sent to the families of the deceased members.

The Hon. Secretary announced the receipt of books presented to the library, and a vote of thanks was passed to the donors.

The following candidates for membership were elected by show of hands under By-law 9: As Fellows: Messrs. P. Morley Horder; A. Paul MacAlister, Cambridge; T. Ridley Milburn, Sunderland; W. Milburn, Sunderland, and A. E. Perkins. As Honorary Associate: Mr. F. Bernard Dicksee, R.A. As Hon. Corresponding Member: Le Comte Robert De Lasteyrie, Member of the Institut de France.

Notices being on the agenda from Messrs. G. A. T. Middleton, Butler Wilson, President of the Leeds and Yorkshire Architectural Society; J. W. Beaumont, President of the Manchester Society of Architects; John Woolfall, President of the Liverpool Architectural Society; Edgar G. C. Down, on behalf of the Cardiff, South Wales, and Monmouthshire Architects' Society; and Herbert Davis, on behalf of the York Architectural Society, that they would bring forward the following motions at the meeting—viz.

1. That this Institute is in favour of the general principle of the compulsory examination and registration of architects;
2. That a Committee be appointed to consider what steps should be taken to give effect to this principle, and to report thereon to a Special General Meeting before the opening of Parliament;
3. To nominate this Committee,

Mr. G. A. T. Middleton formally moved the first resolution as above, and Mr. Butler Wilson moved the following as an amendment—viz.: "That a committee, consisting of the Council of the Royal Institute of British Architects and representatives of the Allied Societies, be appointed to consider what steps should be taken to give effect to the principle of registration, and to report thereon to a special general meeting." The amendment was seconded by Mr. G. C. Ashlin, R.H.A., President of the Royal Institute of the Architects of Ireland, and supported by Mr. J. W. Beaumont.

An amendment, moved by Mr. J. Macvicar Anderson, Past President, and seconded by Mr. Henry T. Hare, that the following words be omitted from Mr. Butler Wilson's amendment—viz.: "what steps should be taken to give effect to"—was agreed to by Mr. Butler Wilson. Whereupon, Mr. Macvicar Anderson's amendment having been put from the chair as the substantive motion, it was

RESOLVED, against one dissentient, That a committee, consisting of the Council of the Royal Institute of British Architects and representatives of the Allied Societies, be appointed to consider the principle of registration, and to report thereon to a Special General Meeting.

The proceedings then closed, and the meeting separated at 9 p.m.

## Books.

*The Law of Compensation.* By J. H. BALFOUR BROWNE, K.C., and CHARLES E. ALLAN, Barrister. Second Edition. London: Butterworth and Co. and Shaw and Co. 1903.

THE name of the principal author of the work is a guarantee that it is sure to be trustworthy. It is, in fact, a complete repertory of the law on the subject of compensation, containing also a large number of useful forms. Compensation, though it changes in its application, actually increases. Railways do not take property to the large extent they did, but municipal enterprise has taken their place. This edition, consequently, contains the Housing of the Working Classes Acts, 1900 and 1903, and references to some two hundred decisions which were delivered since the first edition was published. The fault of the book is a want of brevity in the text, a fault which needs checking, since it tends to make a necessarily large work more voluminous than it need be. We will quote an instance from p. 129. "*Easements.*—There are, however, one or two points as to the measure of compensation which are not quite clear. . . . Thus, where ancient lights were obscured compensation was allowed both for the loss of light caused thereby and also for the loss caused by obscuring lights which were not ancient by the same works, the court following the principle," etc. It would have been easy to state this proposition both more succinctly and more clearly, for the reader who wishes to know the exact point decided.

*Journal of the Sanitary Institute.* Vol. XXIV., Part III. London: Sanitary Institute, Margaret-street, W. 1903.

NEARLY the whole of this part consists of papers read at the Bradford Congress of the Institute in the three "sections" of Sanitary Science and Preventive Medicine, Engineering and Architecture, and Physics, Chemistry, and Biology. Dr. A. Rabagliati has an interesting paper on the causes of infectious fevers, and concludes that the chief cause is "over-feeding, even with sound food (still more, of course, if the food is bad); bad air is a contributory cause." Sewage purification is considered in papers by Mr. Douglas Archibald (in favour of preliminary chemical precipitation); Mr. W. Kaye Parry, M.A., M.I.C.E., who maintains that bacterial treatment is not as economical as its advocates would have us believe, and does not get rid of the sludge difficulty; Professor Henry Robinson; Mr. W. D. Scott-Moncrieff, on the "Standardising of Sewage"; Mr. A. G. Leigh, on "Manufacturers and the Rivers Pollution Prevention Acts"; Mr. K. F. Campbell, on the experimental treatment of sewage containing trade waste at Huddersfield; and by Mr. Charles F. Wike, M.Inst.C.E., on experiments in sewage-treatment at Sheffield. Of more particular interest to architects are the two papers by Mr. A. Saxon Snell, F.R.I.B.A., the first dealing with the design and details of construction of a hospital ward, and the second with the influence of planning and construction upon the cost of maintenance and administration of public baths; the latter is illustrated by eight full-page plans. A paper by Mr. W. Noble Twelvetrees, A.M.Inst.C.E., on "Electricity for Small Hospitals," is also an interesting contribution.

*Lectures to Plumbers.* (Second Series.) By J. WRIGHT CLARKE, Lecturer on Plumbing at the Regent-street Polytechnic. London: B. T. Batsford, 94, High Holborn. 1903.

AS THE title indicates, this book contains a number of lectures on plumbers' work. The lectures were first printed in the *Plumber and Decorator* from 1892 to 1896, and appear to have been issued in the present form without substantial alteration. They are not numbered, and the arrangement leaves something to be desired. The first two lectures are on water-closets and flushing apparatus, and are followed by others on lead coffins and lead bossing. The methods of fixing water-closets are then considered, and after a number of lectures on baths, lavatories, sinks, dairies, household laundries, the physical properties of water, etc., the subject is continued in the final lecture entitled "Positions for Soil-pipes." The author has evidently had a wide practical experience, and his book will be of great service to practical men. Architects will have fewer complaints to make in the future than in the past, if apprentices and journeymen will take Mr. Clarke's lectures to heart. He not only draws attention to the defects commonly found in sanitary apparatus and in the pipes connected therewith, but describes in detail better methods of doing such work, giving many valuable hints by the way. The illustrations—236 in number—add materially to the value of the work, but, unfortunately, we look in vain for illustrations of some of the best modern fittings. Thus, while the concealed standing overflow for baths is shown, the exposed overflow of the same type is neither illustrated nor described. In the lecture on "Wash-hand Basins," reference is made to standing combined waste-and-overflow pipes for baths and wash-handbasins, but the concealed type appears to be intended, and there are no illustrations of any basin overflows, except those of the old-fashioned kind with holes formed in the back of the basin and covered by a shell. It is a pity that the lectures were not brought up to date before being issued in book form.

*The Drainage of Town and Country Houses.* A Practical Account of Modern Sanitary Arrangements and Fittings. By G. A. T. MIDDLETON, A.R.I.B.A., etc. London: B. T. Batsford, 94, High Holborn. 1903.

THIS little book of about 150 pages appears to have been written to take the place of a book on house drainage published by the same author some years ago, and can be recommended as a useful text book for students. It contains ninety-three illustrations, including six folding plates. The elevation and section of the restaurant on Plate E. do not tally with the description on page 11; anti-siphonage pipes are

*not* shown from the basement water-closets, and the lavatory waste-pipe is *not* carried above the roof. The author writes clearly and to the point, but the following sentence on page 23 needs revision: "For house drains the circular section of pipe is almost always used, though a more rapid flow is obtained by using an egg-shaped section, on account of the quicker curve of the invert, for, owing to their shape, the pipes act as a wedge, and in soft or uneven ground cause a break in the line." Chapter XIII., entitled "Disposal Works on a Small Scale for Isolated Country Houses, etc.," is too short and indefinite to be of much service. The author appears to have obtained his information from two firms who are certainly well-known as experts in sewage purification, but whose patented fittings are not the only apparatus suitable for country houses. There is no necessity whatever for a septic tank to be "light-tight," and the statement on page 106 to the effect that the effluent from a septic tank is "infinitely more harmful to human life than before treatment" must be taken with a grain of salt; the author goes on to say that "it should not be passed direct to land or stream in this condition under any circumstances," but on the previous page we are told that the overflow (*i.e.*, effluent) from a cesspool (in which, of course, septic action takes place) may be taken into a sump, "unless there be a stream handy, when it is taken direct to the stream; when there are farms or large kitchen-gardens, however . . . the contents of the cesspool are pumped out and distributed over the land at frequent intervals."

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*British Standard Sections Issued by the Engineering Standards Committee—Beams.* London: Crosby Lockwood and Son. 1903.

WHEN the list of British Standard Sections was issued in February last, the announcement was made by the Engineering Standards Committee that further details would be given at a later date relative to areas of sections in square inches, weights per foot run, moments of inertia, and similar measurements.

The pamphlet to which we now call attention contains the further particulars promised, so far as beams are concerned. It will be remembered that thirty standard sections have already been settled, and for each of these the committee have now given the sectional area, the centre of gravity, the moment of inertia, the radius of gyration, and the moment of resistance. The sizes, thicknesses, and weights per foot are also stated, and at the head of the present list there are two diagrams which make perfectly clear the methods of measurement adopted. The pamphlet is conveniently arranged for reference, and should be of considerable use to all who are concerned in structural steel work.

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## THE POST OFFICE LONDON DIRECTORY FOR 1904.

THIS indispensable work, which has just been issued by Kelly's Directories, Ltd. (182-184, High Holborn, W.C.), is the 105th annual issue. It has been corrected down to the latest date with the care and accuracy which have characterised previous issues of the Directory. Aldwych and Kingsway have been inserted in the "Streets" section, and also on the excellent linen-backed map which is issued with the work, and exclusive of advertisements, the Directory now contains 3,433 pages, which is an increase of 37 pages over the edition of 1903. In this connection the publishers make an interesting announcement as follows: "The area of the Metropolis as given in the 'Post Office London Directory' has remained practically unchanged for more than fifty years, whilst for a long period the adjoining districts have been given in 'Kelly's Suburban Directory.' The latter was at first issued only every fourth year, then in alternate years, and finally every year. But, as the publishers believe, this plan does not fully meet the wants of the public, and they have therefore decided to include in one volume the whole of the district lying within the boundaries of the County of London, thus adopting an official in the place of a mere arbitrary boundary. The arrangement of the 'Post Office London Directory' will undergo no change of any kind; it will be published in identically the same form and at the same price as hitherto. The arrangement of the abridged Suburban Division as regards the 'Streets,' 'Commercial,' 'Trades,' and 'Private Residents' sections will be the same as that of the 'Post Office London Directory.' . . . For the convenience of those subscribers who do not wish for a volume more bulky than that to which they have been hitherto accustomed, an edition printed on fine paper will be prepared. In this way it is hoped that the addition of about 1,400 pages will be made without appreciably increasing the size of the volume. The work will also be obtainable in two volumes at an extra cost of 3s. 6d. The alteration by which the 'Post Office London Directory' will be offered with the County Suburbs in one single volume will be made next year (in the edition for 1905), but a few copies will be offered for sale on the publication of the next 'Suburban Directory' (in March, 1904)."

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## TRADE CATALOGUES.

WE have received from the Auto-Balance Door (Parent) Co. a copy of their catalogue of auto-balance doors, windows, gates, etc. The construction of these fittings is decidedly ingenious, and, as it is approximately the same in all cases, a short description of one of the doors will suffice to give a general idea of the invention. The principal feature is the division of the door into two unequal parts along a line parallel to the diagonal but at a short distance from it. The apex of the lower of these is rigidly fixed to one end of the top rail, which is pivoted in the centre. The other is pivoted at the bottom, and has a triangular frame attached to the stile near the heel in the same plane as the door. The apex of this triangular frame and the free end of the top rail are united by two flat iron bars working on pivots at the ends. A handle is fixed on the diagonal stile of the upper leaf of the door, and when this handle is pulled towards the jamb the leaf revolves sideways on its pivot until the edge of the diagonal stile is in a vertical position coinciding with the jamb of the opening. This movement depresses the apex of the triangular frame attached to the leaf, and communicates the motion (by means of the iron bars) to the free end of the top rail; as the top rail is pivoted at the centre, the depression of the free end causes the other end to rise, and thus swings the lower leaf of the door sideways, leaving the whole opening of the doorway clear. The leaves may turn into recesses formed in the partitions in which they are placed, or may be exposed to view. These doors have been used in Belgium for tramcars and railway wagons, as well as for offices and other rooms, and have recently been introduced into this country. It must be confessed that the diagonal lines necessitated by the method of construction detract from the appearance of the doors.

Messrs. Hobbs, Hart, and Co. have sent us their new catalogue of locks and lock-furniture. It is a well-printed volume of about a hundred pages, bound in cloth, and fully illustrated. Among the locks we notice various forms of the patent "Protector" lever lock, which is specially designed to afford protection against picking and fraud. The "Protector treble-action transmutation key locks" have keys with changeable steps, ranging in number up to fifteen; 5,040 transmutations can be made in a key with seven changeable steps, and more than a billion in one with fifteen. The lock is so arranged that by the mere art of locking it takes the form of the key used, to the exclusion of all other forms. Less expensive locks with levers up to five in number are also shown, including mortise, rim, and dead locks. Cupboard and till locks, lock-furniture of metal and wood, finger-plates, padlocks, espagnolette bolts, panic bolts, door-handles, sash-fasteners, and other fittings are illustrated and priced. Architects in search of locks of special or ordinary type will find this catalogue very useful.

From the Farnley Iron Co. (Farnley, Leeds) we have received an excellent catalogue of glazed bricks and sanitary ware made from the Farnley clay. The catalogue is clearly printed on good paper, and contains about fifty coloured plates, illustrating the articles manufactured by the company, in addition to about a dozen pages of letterpress. The first section deals with glazed bricks and tiles, and contains examples of square, shaped, and moulded bricks in great variety, Picking's patent hollow glazed partition bricks, Balaam's patent glazed bricks for the floors and walls of swimming-baths, and Still's patent scum-troughs. The next section includes porcelain baths of various kinds, and is followed by others dealing with lavatories, slop-sinks and hoppers, kitchen and butlers' sinks, wash-tubs, mangers, cattle and pig troughs, &c. Seven plates are occupied by illustrations of stall urinals and floor channels; water-closets and latrines are shown on four plates, and these are followed by four plates containing illustrations of glazed channels for manholes, post-mortem tables, and laboratory tables and sinks. For the prices of the goods the reader is referred to a separate price-list, a copy of which has not been sent to us. Undoubtedly there are certain advantages in a separate price-list, but there are also obvious disadvantages. An architect often wishes to know the prices of goods before specifying them, and if these are not given in one catalogue he will turn to another catalogue where prices are given, and select from this in preference to the other. A separate price-list—even if the architect has received a copy—may be lost or mislaid, and manufacturers who issue such separate lists would, we think, find it to their advantage to provide a pocket in the catalogue for their reception, or some other simple method of securing them.

From the Willesden Paper and Canvas Works we have received a small but interesting catalogue, containing descriptions and prices of their waterproof paper and canvas, and illustrations showing the uses to which they can be put. Among these uses may be mentioned the covering of walls and roofs of light timber buildings, the covering of rafters or roof-boarding under slates and tiles, the insulation of cold storage chambers, tents, awnings, portable baths, canoes, and van-sheets. Directions are given for fixing the materials, and prices of the materials per lineal yard are printed on the last page.

Messrs. J. Sagar and Co., Halifax, send us some special circulars of wood-working machinery. The first item described is a quick-feed machine of large size for planing floor, ceiling, and other boards and planks. The second is a heavy moulding and floor board planing machine, designed for dealing with floor and other boards and for working all kinds of mouldings at a high rate of speed. The other appliances illustrated and described are different varieties of four-cutter and five-cutter planing and moulding machines for hard or soft woods. All the machinery mentioned appears to be of the most solid construction, and to be equipped with all necessary auxiliaries and attachments to provide for satisfactory working and the convenience of users.

Messrs. Waygood and Co. send us a pamphlet relative to various features of their electric lifts, the operating mechanism of which is of entirely British manufacture and fitted with brakes coming into action automatically when the current is shut off from any cause. Some controversy has arisen as to the comparative merits of drum and V sheaves in connexion with the driving of electric lifts, and it may be noted that Messrs. Waygood and Co. very properly favour the adoption of drum driving for all passenger lifts, using V drives for goods lifts only. One objection against drum winding is the possibility of the cables becoming slack under certain contingencies. This, however, is provided against by the adoption of a special automatic switch coming into action and stopping both the motor and the cage if a cable should become slack. Although the point is not emphasised in the present pamphlet, it may be well to mention the fact that all the lifts of this firm are fitted with safety gear.

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## *ARCHITECTURAL SOCIETIES.*

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—At a meeting of the Council of the Birmingham Architectural Association, held on the 1st inst., it was resolved that a protest be entered against the increasing amount of architectural work carried out by the City Surveyor, believing that it is not in the interest of the ratepayers nor conducive to the best architectural result, when important building work is carried out without the designs and superintendence of a qualified architect, nor fair to the architectural profession, which is well represented in Birmingham, to be repeatedly ignored when public buildings are contemplated by the City Council.

# Correspondence.

## THE ABBEY OF ST. VICTOR, PARIS.

SIR,—The late Mr. H. W. Brewer's conjectural restoration, which appeared in your last issue, represents the famous abbey of St. Victor, which was founded shortly after 1108 by Louis le Gros, and is said to have been the cradle of a long list of theologians, philosophers, poets, and commentators whose writings are still preserved in the archives of Paris; amongst others, Maurice de Sully, Bishop of Paris (1160-96), to whom we owe the church of Notre Dame; Hughes, Adam de St. Victor, Pierre le Mangeur, and others. It possessed also treasures of great value and a library, which is said to have been the most important in the kingdom. Portions of the church, including the nave and choir, were rebuilt in the first third of the sixteenth century, as also the dormitory, refectory, and infirmary, but the great town, the crypt, and portions of the Chapter House remained the same as when built by Gilduin, the first abbot. At what period the abbey was destroyed is not known, but on its site was built in 1813-19 the existing Halle-aux-Vins, or, at least, the south-west blocks of the same, and Mr. Brewer would seem to have suggested in the foreground on the left the original buildings, which constituted the docks at Paris, and where the wine had to be sent for the payment of the *octroi* or duty. The south-west wall of the enclosure was flanked by the Rue de St. Victor, the continuation of which now forms the south-west wall of the Jardin des Plantes.

North-west of the abbey were the towers and curtains of the fortified walls built by Philip Augustus and commenced in 1208 on the south side of the Seine by the "Tour de Nesle" opposite the old Louvre. These walls enclosed the hill on the south side of the Seine, on which the Abbey of St. Geneviève was founded by Clovis, and, after passing round the abbey, returned at right angles to the river. About 100 yards to the east of the angle tower was a bridge, the Pont de la Tournelle, of ancient foundation and several times rebuilt, which crossed over to the centre of the Island of St. Louis. It is possible that the nearest and the corner tower may have been known as the Tour de la Tournelle owing to its proximity to the bridge just mentioned. At all events, it would seem to have given Mr. Brewer a name for the picturesque group of towers which is shown on the right of his drawing, but there is no record of any priory in Paris of the name given.

Scarcely anything remains of the Abbey of St. Victor. It is said there are some Gothic windows which may have belonged to the Grange now built up in one of the houses on the south-west side of the Halle-aux-Vins. Of the Rue St. Victor only a small portion retains the name starting from the new Boulevard St. Germain. Close by Notre Dame des Champs, and running as far as the Rue des Fossés St. Bernard (originally the Rue des Fossés St. Victor), there stood the Port St. Victor in Philip Augustus' wall, and portions of the wall still exist in the rear of the houses close by.

R. PHENÉ SPIERS.

*** Our own first impression on studying Mr. Brewer's drawing was that he had intended the turreted line of building on the right for part of the wall of Philip Augustus, which we knew started from the river bank about this point; but it did not seem quite sufficiently of the character of a fortification to justify its certain attribution, in the absence of Mr. Brewer's own explanation of the drawing. The block of building on the extreme right occupies almost exactly the place assigned in Mr. Belloc's plan of late mediæval Paris to the "Palais des Tournelles," which we took, therefore, to be the successor to the "Priory des Tournelles" mentioned in Mr. Brewer's title. We are much indebted to Mr. Spiers for the information which his exceptional knowledge of Paris has enabled him to give.—ED.

## PAINTINGS AT THE DUCAL PALACE, VENICE.

SIR,—It may not be generally understood even by those who know their Venice—from personal visits or from their "Ruskin"—that opportunities now exist for examining in detail not only the great picture of Tintoretto which covered the "Wall of the Paradise," as Ruskin calls it—at the east end of the great Council Chamber—but also the wall itself which this picture was painted to cover after the great fire of 1574, and so to note the actual and original "Paradise" painted thereon by Guariento as soon as the building was finished in 1362-5 (according to "The Stones of Venice," Chapter V., "The Ducal Palace.").

Of course the sight of the remains of this original decoration was not possible to the author, and the tradition was that it had "withered before the flames"—but still there are portions of real figure work existing, and indications of pattern work—quite worthy of complete investigation. If an educated artist would devote a little time to the study on the spot (and what more delightful task could be given such a one?), I have no doubt the whole scheme of this original Paradise by Guariento could be made out. Will no one take the hint? As to the Tintoretto, which we have all only seen hitherto—the immensity of it as a picture is peculiarly observable now it is transferred to new canvas, and stands supported by framework in the centre of this grand room, with the light from the windows of the sea front full upon it.

What is going to be done I do not know; but there it is at present, available for close study, and, with the liberality of the present *régime*, is free to be gazed upon by all Venice on Sundays, and for a small fee on other days.

C. F. HAYWARD.

## ACTON PUBLIC OFFICES AND TOWN HALL COMPETITION.

SIR,—Having seen the drawings submitted in this competition, I am glad to see that your opinion of the assessor's award, that he has not selected the most suitable design, entirely agrees with the conclusion I came to after a careful examination of the designs. It is remarkable that in a great number of recent competitions the assessor has selected a design which competitors and non-competitors have agreed was not the best one. It is also remarkable to find that the assessor has, in nearly all cases, given undue preference to the plan.

This preference for the plan seems to have been so pronounced of late that it is surprising that elevations are asked for.

Surely it is time that architects or the public protest and ask that those who live outside the buildings should be considered as well as those within. An architect who has made a fine elevation and a plan not far below the best can easily make slight modifications to his scheme when he meets the committee and finds out what they want, and the result will be a fine building; whereas the man who has won the competition solely for his plan, and with an elevation which the assessor does not appear to have looked at, will never make a good elevation however much his committee may desire it.

This is a thing they manage better in France. Paris would not allow its streets to be defaced by buildings exhibiting an utter absence of study, proportion, and refinement, merely because the plan was a good one.

FRANCIS W. BEDFORD.

SIR,—Whilst thanking you for your kind remarks about my design for the above, I should be glad if you will kindly allow me a little space in your next issue to explain that my scheme cannot claim the remarkable point you name with regard to the position of the Councillors' cloak rooms, etc., which are *not* reached through the Council chamber, but *en route* to the approach thereto in common to it in the committee rooms. The lavatories you mention were designed to serve another and obvious purpose.

With regard to the provision of corridors, etc., to the Town Hall, these may be ample, but were not intended so much for architectural effect as for distributing the audience in sections in case of panic. I think this point needs no further argument after the recent terrible object-lesson at Chicago.

C. E. MALLOWS.

## LIABILITY OF EMPLOYERS.

SIR,—In your article on Workmen's Compensation in *The Builder* of January 2, you point out that the decisions in the case of "anthrax" contracted during the victim's legitimate employment, may have far-reaching results, and be made to include such illness as "lead-poisoning." This, so far as it affects the building trade, would include only painters. I should like to point out at once, therefore, that the liability of painters to forms of lead-poisoning is a matter entirely within their own control. It is a question of personal cleanliness; and the properly trained painter, who invariably washes his hands before taking food, does not suffer from lead-poisoning. It is the careless or slovenly man who neglects this well-known precaution who so suffers. Lead-poisoning is, for painters, a preventible trouble, and, therefore, in no sense an "accident."

There are, doubtless, here and there, constitutions exceptionally sensitive to the action of lead; but such cases must so soon be obvious to the individuals concerned that they would hardly follow the calling.

J. D. CRACE.

## EASTER HOLIDAYS AND THE BUILDING TRADES.

SIR,—Are the Easter holidays a nuisance to the building trades? That is a question which I should very much like to see taken up by your readers. For some years past I have been of opinion that the great majority of employers and employees in the building trades would gladly see the end of the Easter holidays, as far as their trade is concerned.

It is a very different matter with clerks, shopkeepers, factory hands, etc., in fact, all whose employment is constant, to have certain specified days for holiday-making. But is there anything to prevent the busiest man in the trade from taking a holiday almost when he likes? Even in the summer there are slack periods during which almost any man can be spared by his employer, if he wants a holiday. Then there is the "bean-feast." To quite three-fourths of the men there are already too many unavoidable cessations from work. At Easter the builders and decorators are just getting into full swing, when along comes this holiday. Nobody seems to know till a day or two before Good Friday how long the works or the job will be closed. Sometimes some of the men are allowed to work, and not others, even on the same job. As regards the men, I am positive they do not knock off on Good Friday on account of the religious associations of that day. We all know full well that not half the men have the means, if the will, to go holiday making at this period. The weather, too, is always treachercus.

All things considered, I cannot see the good of Easter holidays in the building trades. A good way to ascertain the feeling in the trades would be for about a dozen large firms to take a plebiscite of their men on the question, say, on the first of March.

ARTHUR A. GEE.

## BOOKS RECEIVED.

EDUCATIONAL WOODWORK. By A. C. Horth. (Percival Marshall and Co. 3s. 6d.)

FREEHAND LETTERING. By Victor T. Wilson, M.E. (Chapman and Hall.)

DISINFECTION AND THE PRESERVATION OF FOOD. By Samuel Rideal, D.Sc. (The Sanitary Publishing Co.)

# Illustrations.

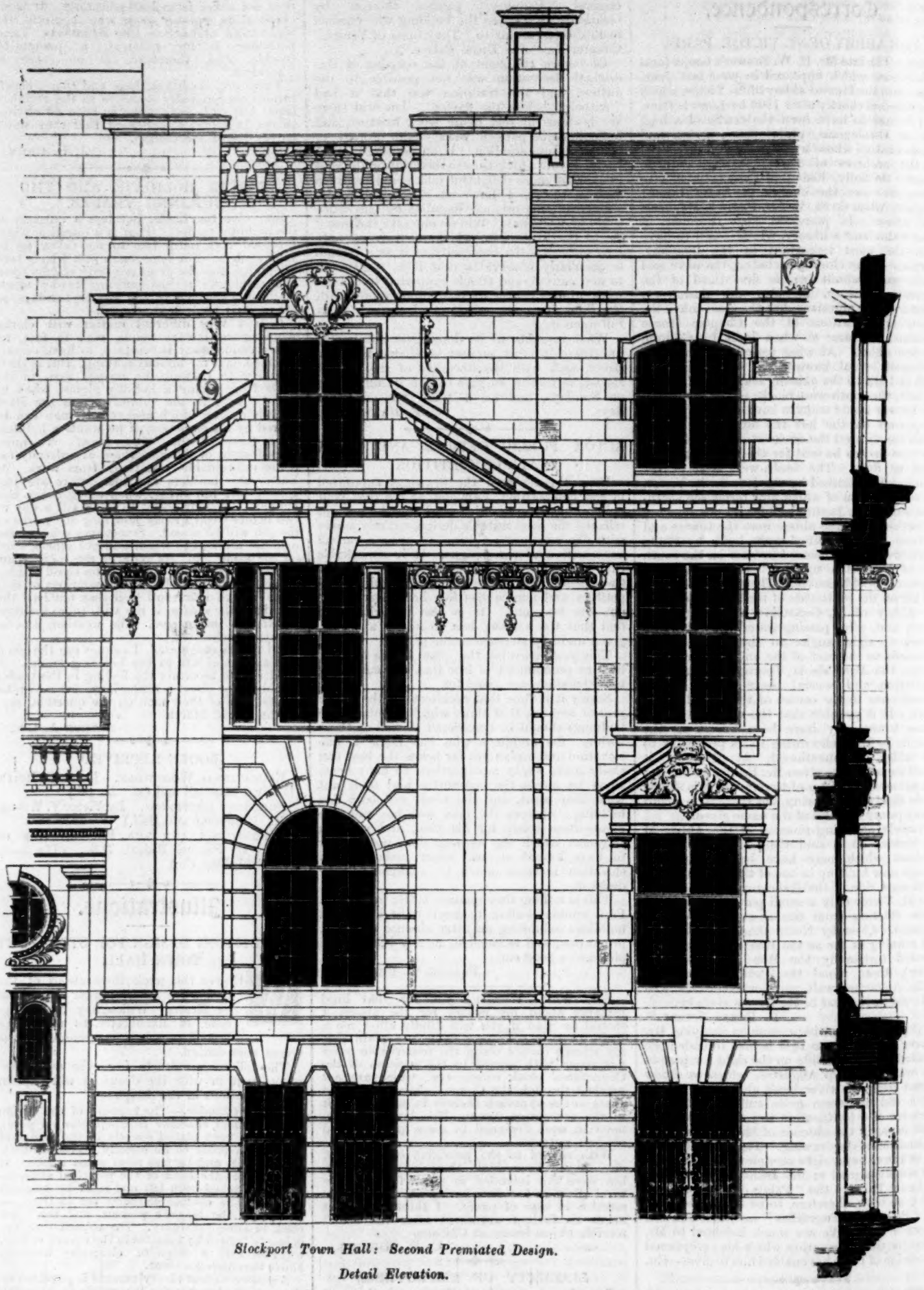
## COMPETITION DESIGN FOR STOCKPORT TOWN HALL.

WE give this week illustrations of the design for the Stockport Town Hall by Messrs. Willoughby and Langham, of Manchester, to which the second premium was awarded in the recent competition.

The following extracts from the architects' report sent in with the drawings will explain their intentions in the design:—

*Council Chamber.*—The keynote of the design is the council chamber (semi-circular on plan), which has been placed exactly in the centre of the site in order to be equally accesible from every point, and be free from street noises. It is situate at the head of the principal staircase and approached both left and right by spacious lobbies. The committee-rooms are in front, *en suite* with the Mayor's parlour, and the town clerk in close proximity. The council chamber is amply lighted by lunettes in the curved ceiling, together with a range of clearstory windows above the chairman's seat.

A gallery to seat ninety persons is provided to the council chamber for the public to hear the debates, having a separate access and staircase. A minstrels' balcony also is shown to the No. 1 committee-room, approached from the second floor corridor; this would be found very convenient when the committee-rooms are being used *en suite* for mayoral banquets, etc. Suitable servery and kitchen over (fitted with cooking range, food lifts, etc.) are also planned in conjunction with the suite of committee-rooms for use on similar occasions, due provision having been made for the exclusion of fumes, etc., whilst in use, either to rooms or corridors, by the provision of double doors.



*Stockport Town Hall: Second Premiated Design.*

*Detail Elevation.*

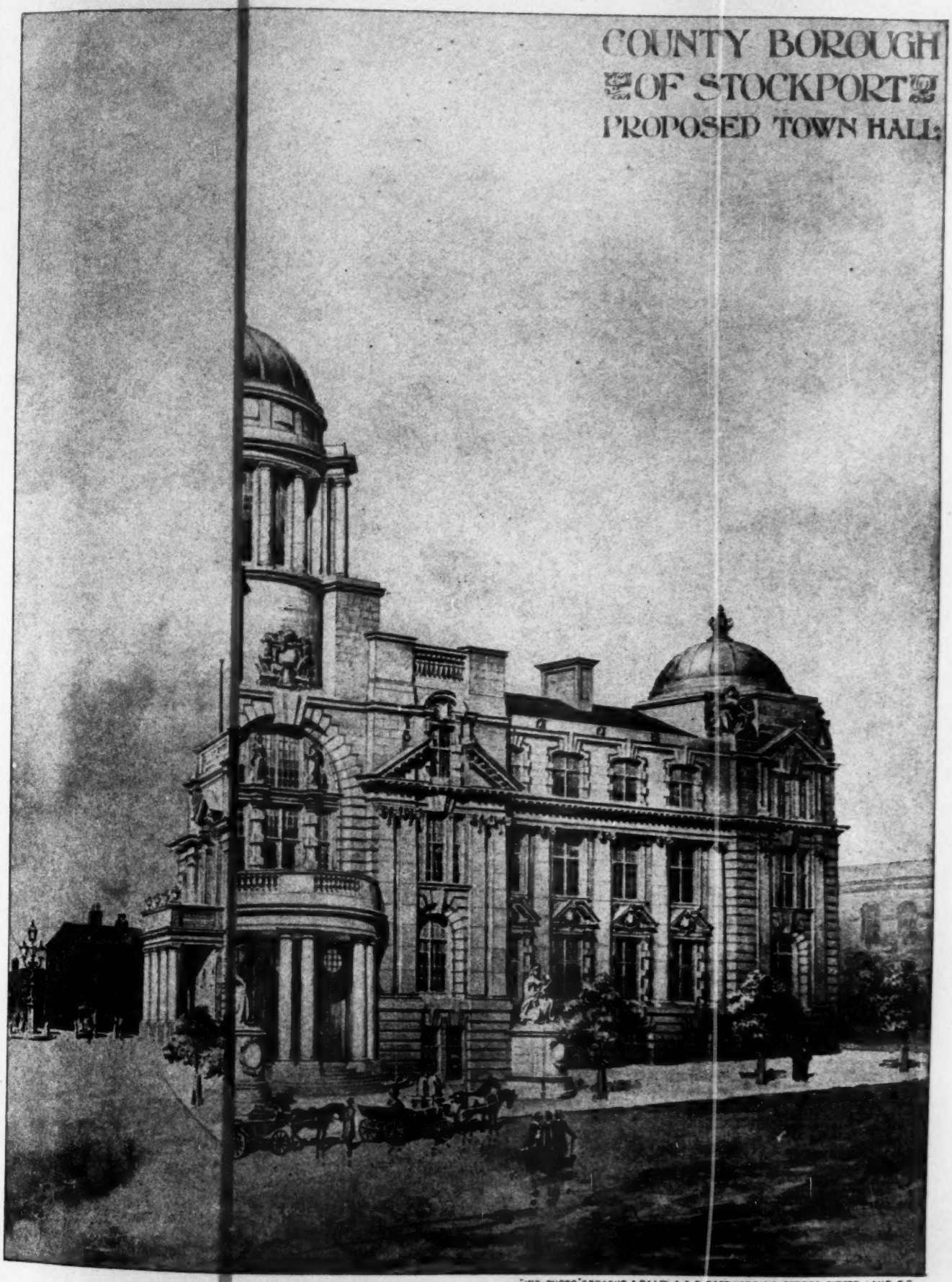
Ample and diffused light is obtained to every room, corridor, passage, etc., throughout the structure, including the basement floor. We believe as an absolute certainty there will not be a dark corner in the building, and this without the necessity of using "borrowed" light.

The position assigned to the several conveniences, lavatories, etc., for the various departments throughout have been carefully decided upon. In both courtyards isolated blocks are shown, connected with each floor and away from the principal façades, thus obviating the objection arising from unsightly pipes, cowls, etc., and approached through an ante for additional privacy and sweetness. A separate block of lavatories, etc., are also provided in the basement (furthest away from the business part of the structure) for the exclusive use of lady typists, etc., entered by a "private" corridor—in our opinion a very desirable provision.

Suitable provision for a cleaner's store-room to every floor throughout both the public hall as well as the municipal offices has not been overlooked.

*The Public Hall.*—As this is to be used for purposes other than municipal, access is required to it at such times as the offices may be closed as well as when the offices are open, and without causing obstruction to the municipal work. Separate entrances from the street were therefore essential, although it is also accessible on the ground floor (and, if desired, on the first floor also) from the council suite for civic purposes, etc. To provide independent access and egress both back and front to this hall from the street, without separation from the municipal offices was, in our

COUNTY BOROUGH
OF STOCKPORT
PROPOSED TOWN HALL.



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LLOUGHBY & LANGHAM.

STOCKPORT TOWN HALL COMPETITION:

COUNTY BOROUGH
OF STOCKPORT
PROPOSED TOWN HALL.

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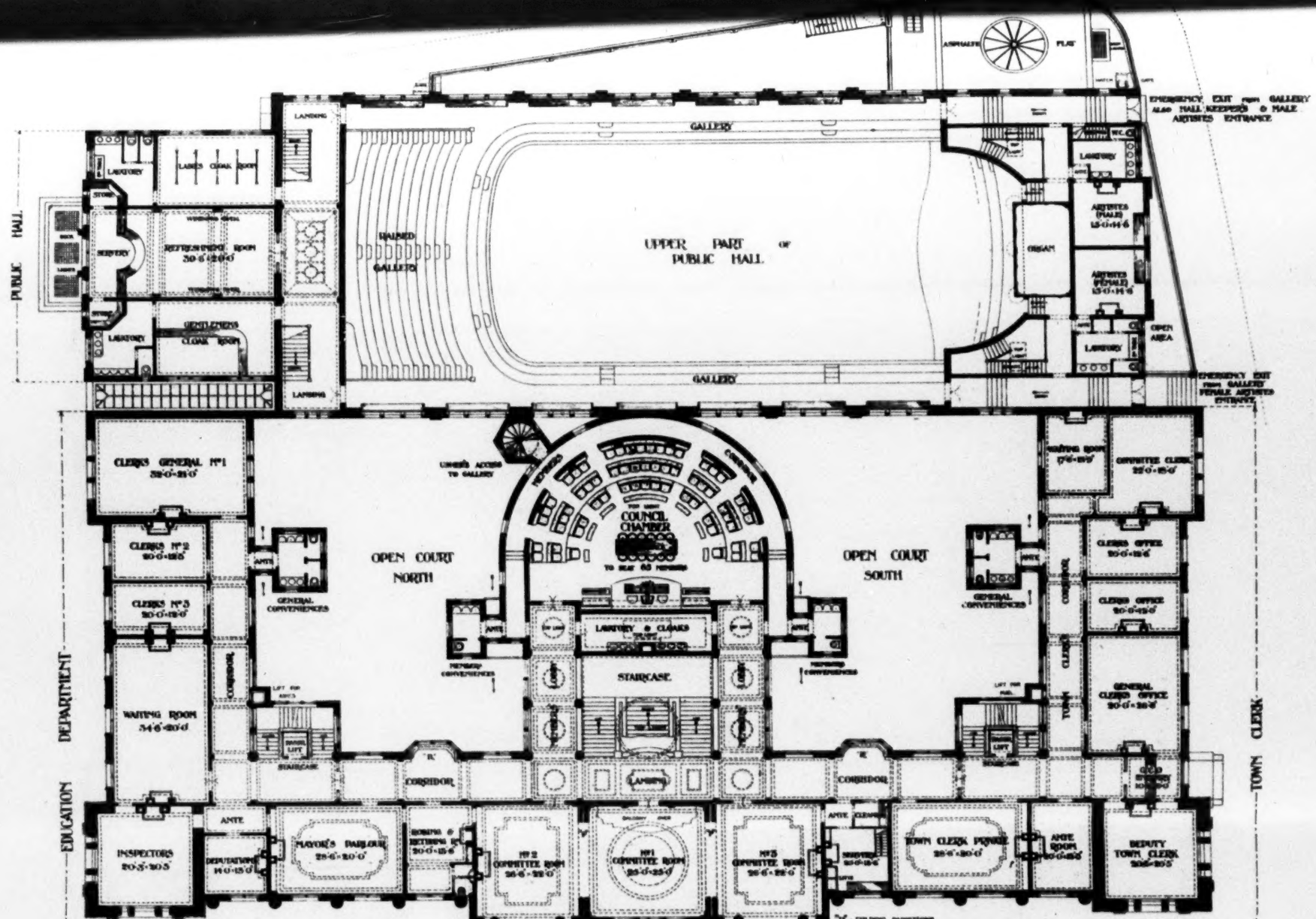
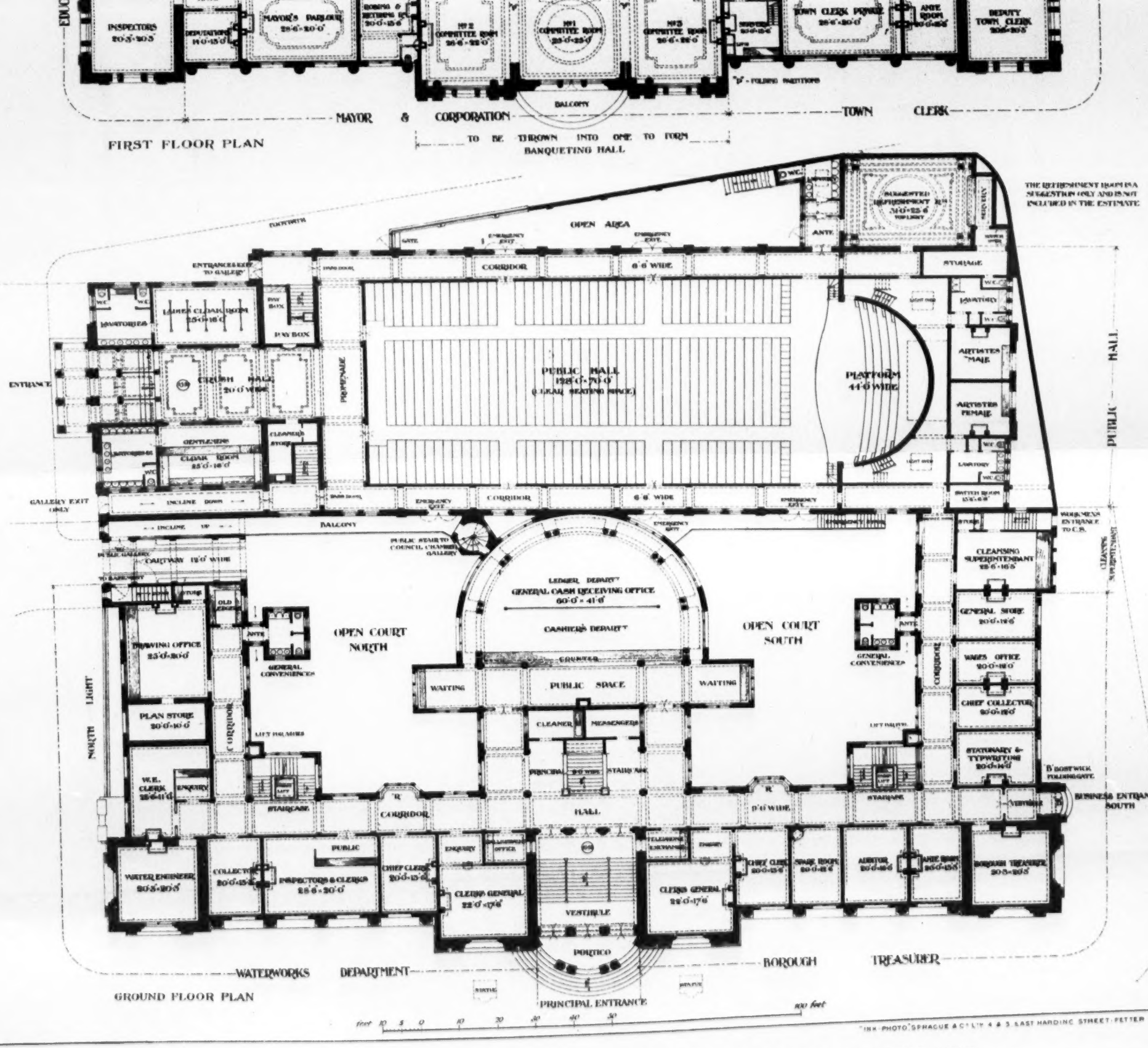
ETITION: SECOND PREMIATED DESIGN.—By Messrs. Willoughby & Langham.

PERSPECTIVE VIEW.


PUBLIC HALL
EDUCATION DEPARTMENT
TOWN CLERK
GALLERY
RAISED GALLERY
UPPER PART OF PUBLIC HALL
ORGAN
LANDING
LADIES CLOAK ROOM
LAVATORY
STORE
REFRESHMENT ROOM 20'-0"x20'-0"
GENTLEMENS CLOAK ROOM
ARTISTES (MALE) 15'-0"x14'-6"
ARTISTES (FEMALE) 15'-0"x14'-6"
OPEN AREA
EMERGENCY EXIT from GALLERY also HALL KEEPERS & MALE ARTISTES ENTRANCE
EMERGENCY EXIT from GALLERY FEMALE ARTISTES ENTRANCE
CLERKS GENERAL Nº1 25'-0"x21'-0"
CLERKS Nº2 20'-0"x18'-0"
CLERKS Nº3 20'-0"x18'-0"
WAITING ROOM 34'-6"x20'-0"
INSPECTORS 20'-3"x20'-3"
ANTE
DEPUTATION 14'-0"x15'-0"
MAYORS PARLOUR 23'-6"x20'-0"
ROBING & RETIRING R.M. 20'-0"x13'-6"
Nº2 COMMITTEE ROOM 26'-6"x22'-0"
Nº1 COMMITTEE ROOM 25'-0"x25'-0"
Nº3 COMMITTEE ROOM 26'-6"x22'-0"
COUNCIL CHAMBER
OPEN COURT NORTH
OPEN COURT SOUTH
UPPER ACCESS TO GALLERY
GENERAL CONVENIENCES
LAVATORY & CLOAKS
STAIRCASE
LIFT
CORRIDOR
ANTE CLERKS
TOWN CLERK PRIVATE 23'-6"x20'-0"
ANTE ROOM 20'-0"x13'-0"
DEPUTY TOWN CLERK 20'-6"x20'-3"
WAITING ROOM 17'-6"x15'-0"
COMMITTEE CLERK 25'-0"x15'-0"
CLERKS OFFICE 20'-0"x13'-6"
CLERKS OFFICE 20'-0"x13'-6"
GENERAL CLERKS OFFICE 20'-0"x26'-6"
STORE

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...SIGNED DESIGN.—By Messrs. Willoughby & Langham

# HALLYARDS ~ PEEBLES-SHIRE

for Dr. W. ANDERSON of HALLYARDS:

FIRST DESIGN. R. S. Lorimer, Architect: 49 Queen Street Edinburgh:

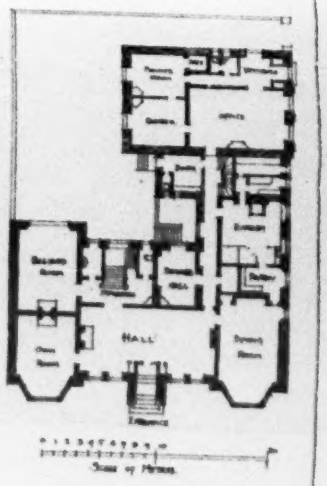
A PLAN.

PHOTO LITHO SPRAGUE & C° LT° 44 & 5 EAST HARDING STREET FETTER LANE E.C.

# St. Andrews · Helsingfors · Finland ·

for · Herr · Ossian · Donner ·

R.S. Lorimer · Architect
49 · Queen St · Edinburgh

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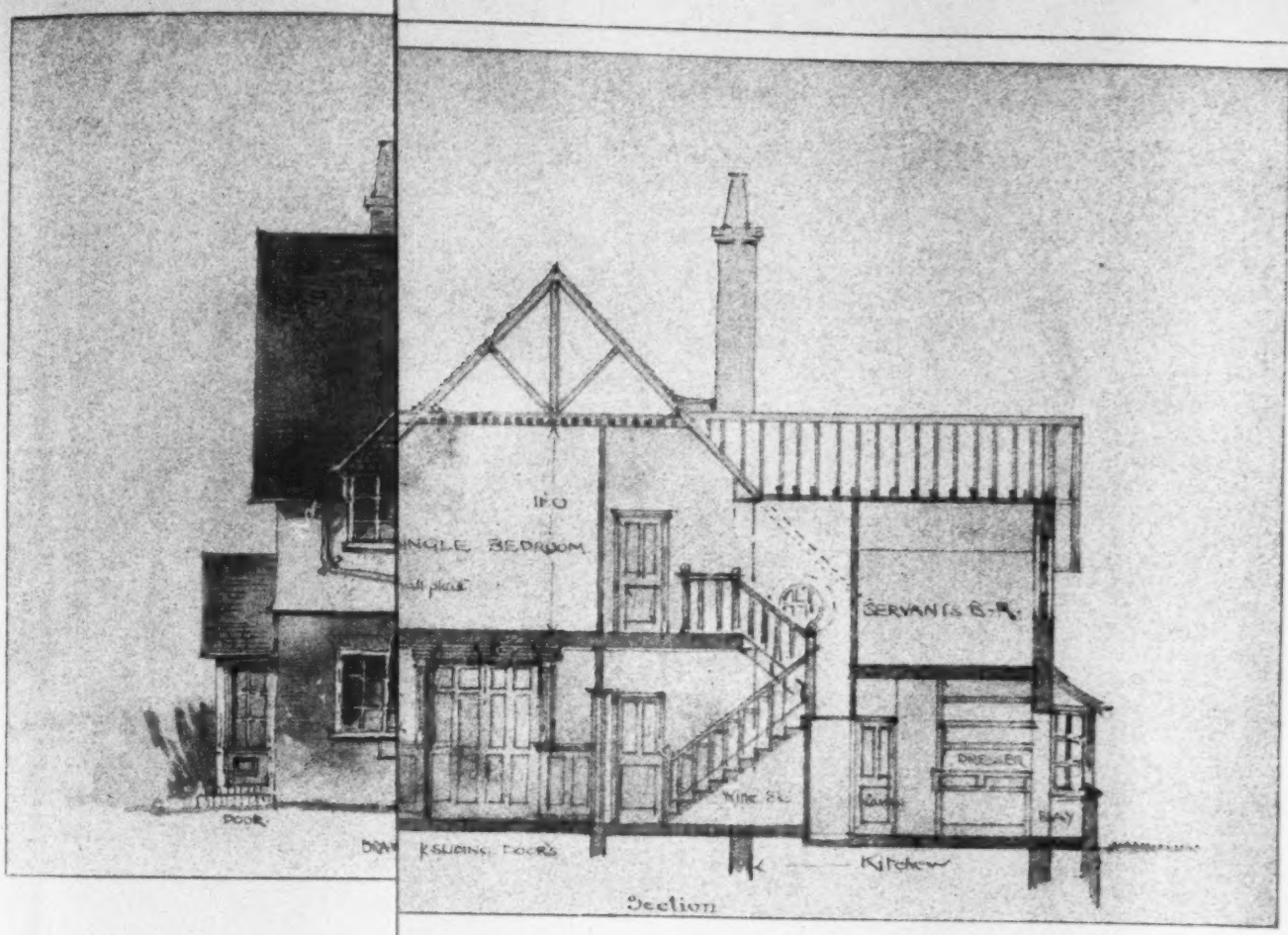


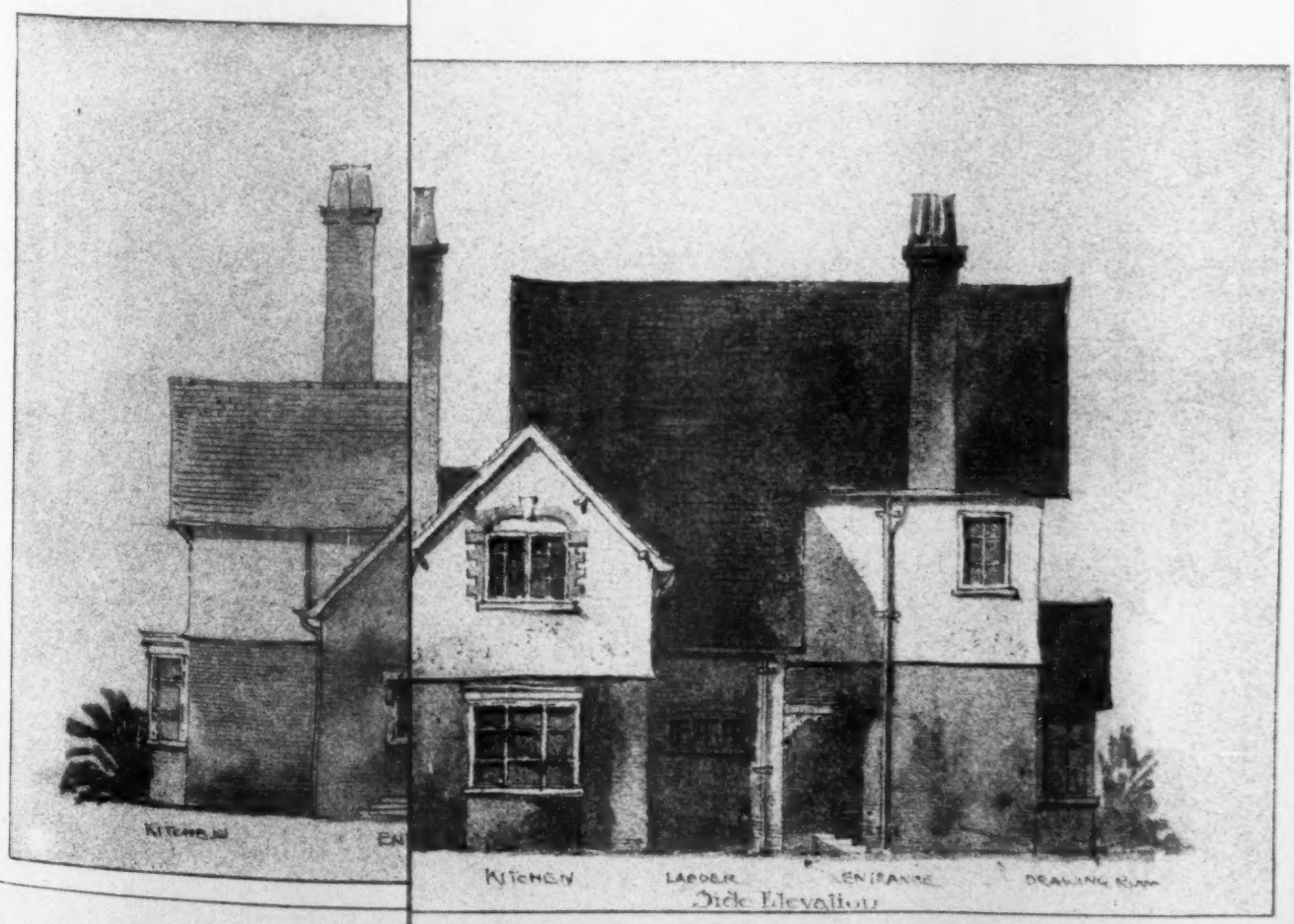


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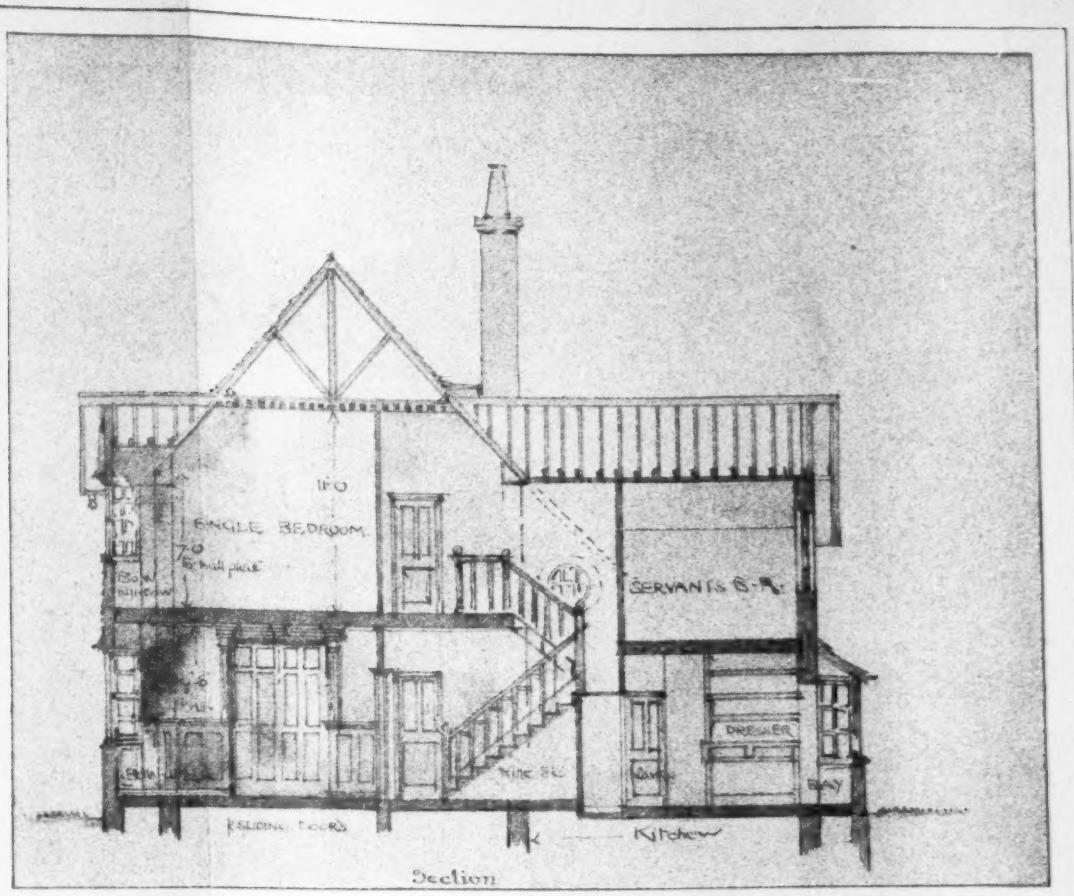
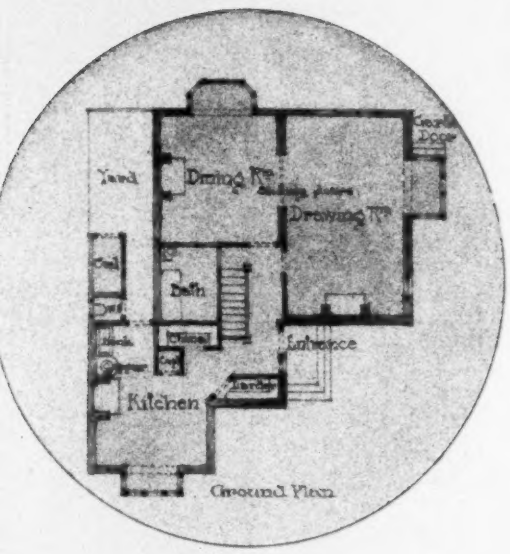
Back Elevation

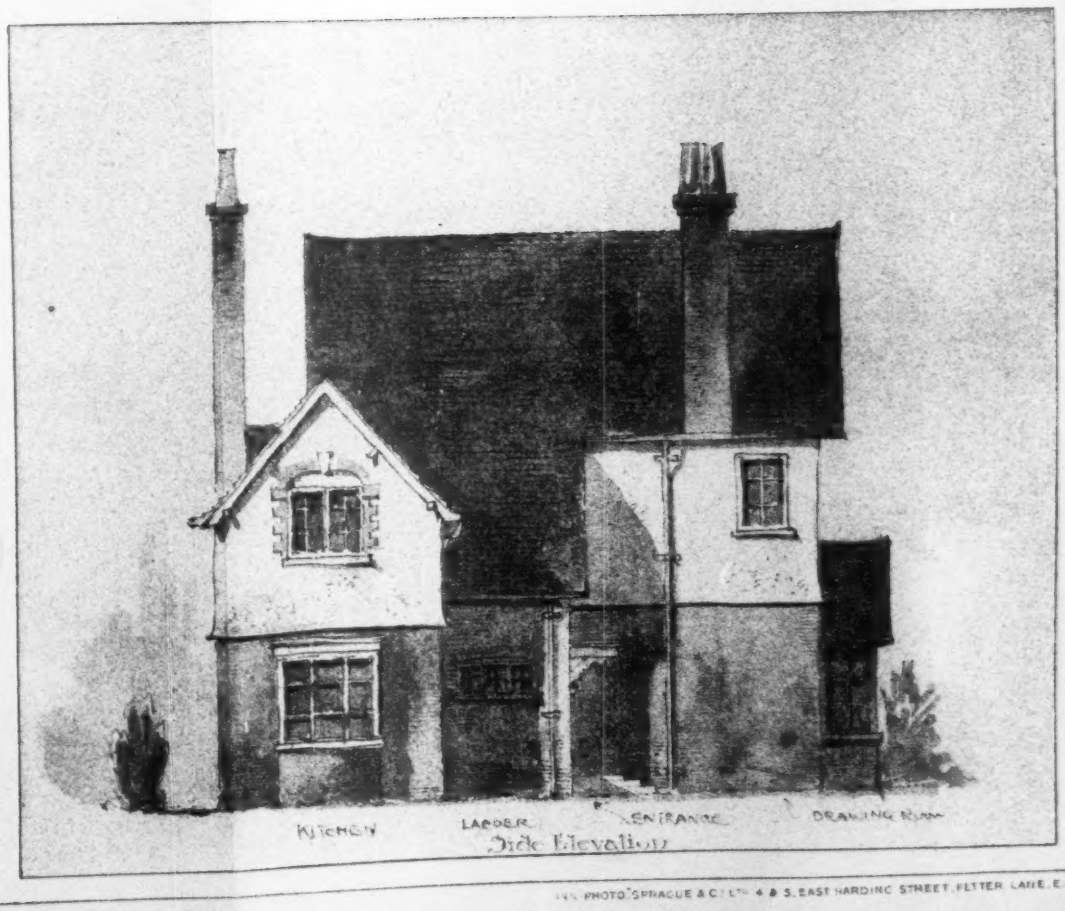
Front Elevation




Section




Cottage, Beccles




Side Elevation

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E, BECCLES.—Mr. W A. Pite, F.R.I.B.A., Architect.

opinion, a necessity. This we have accomplished by placing same at the easterly side of the site, being the least important for position and aspect, and yet where these objects can be attained in the best and simplest manner. It should be noted also that the ground level of the public hall in our scheme is the same as the upper ground floor of the municipal offices.

The hall is lighted by windows from both sides. The ceiling is segmental in form, and the roof principals are of steel construction without thrust on either side wall. The most careful consideration has been given to ensure that the acoustic properties of both the public hall and council chamber shall be good, many of our public edifices being spoiled by reverberation, which renders them even when filled with people, defective for speaking or musical purposes. The main ceiling is slightly varied in level—not one unbroken surface—with sufficient number of distinct breaks, so that any sound waves which might impinge on the ceiling would be scattered and dispersed rather than reflected to the audience. Columns and deep recesses have been avoided on the side walls, which never aid sound, but a simple surface treatment has been suggested in lieu of same. The science of acoustics having reached a more practical stage, the architect of to-day must consider, besides plan and proportion, the resonant as well as the absorbent qualities of the materials used, as well as their mode of finish, to obtain successful results. This we have endeavoured to do.

The public hall is planned so that if desired it can be built at a future date to the municipal offices without entailing any structural alterations. It will be observed that in planning the public hall and council chamber we have carefully avoided columns, either for construction or ornament, in order that an uninterrupted view may be secured to every occupant. The gangway at the back of the council chamber is also worth noting. By this arrangement the amount of traffic across the floor will be greatly reduced, each member being enabled to reach his particular seat without distracting the others. Every door also would have a check spring fixed in the floor to prevent slamming, and glazed with embossed glass, with a small portion left clear to enable a member to see through from the corridor without opening same.

Although the site is somewhat irregular in shape (apart from the discrepancy in levels), yet the whole of the offices and rooms have been made rectangular in our scheme, the spare spaces being utilised for lighting purposes, knowing the bad effect of crooked roofs, etc., on the façades, apart from the undesirable corners and angles that necessarily arise in the plans.

*Architectural Character.*—After careful reflection, we decided that a structure in the eighteenth century English Renaissance of stern simplicity (and conforming to your instructions) would be the most appropriate. So far as we know, our design is as original as any may be in the twentieth century; certainly no existing building has been consciously copied, either in whole or part, excepting, of course, in matter of detail. Our ideal has been to obtain the dignity essential for the municipal buildings of an important town, combined with the utmost convenience of internal arrangement together with the maximum amount of light. The architecture throughout has been kept subordinate to the practical requirements, and in no single case throughout the design has the convenience of plan been sacrificed in order to improve the elevations.

Our first consideration has been to produce a design of a monumental yet simple character, and one that will harmonise with the adjoining buildings, also to avoid a "great portico" (two stories in height), which, apart from the grave objection as to interference with the light to many important rooms, would enter into competition with the present erections in the immediate vicinity. We have also refrained from costly balustrading to any appreciable extent, relying upon the skyline being broken by one central and two angle domes of modest proportions. Sculpture has been very sparingly introduced (see ½ in. detail): the curved pediments over ground floor windows to front elevation would lend themselves to the introduction of heraldic quarterings of appropriate character.

We desire to direct attention to the suite of committee-rooms, which on occasion can be converted into a large banqueting hall. The great arched window, being, in fact, the centre of the composition, besides expressing the internal treatment, provides access also to a balcony of ample dimensions over the portico for civic announcements, etc., as well as giving increased height and dignity and extra ventilation to the suite of rooms.

*Heating and Ventilation.*—It is proposed to heat and ventilate the public hall and council chamber on the lines of the Plenum system: fresh air would be passed through a chamber fitted with dry and wet screens, for sieving and washing the air before passing through the heating chamber. A powerful fan would force hot air in winter and cold air in summer through ducts having outlets in suitable positions in both rooms to secure a uniform distribution. For extracting the vitiated air a brick shaft to be provided, up the centre of which would be fixed the cast-iron smoke pipe from boilers, thus securing in winter a powerful exhaust at a minimum cost. Electric fans also to be utilised in suitable positions, having a collecting chamber connected by exhaust ducts from openings at or near the ceilings, as shall be arranged. The remaining rooms throughout the building would be heated by low pressure hot water or steam radiators, admitting warm fresh air under control, extraction flues being provided at various points to ensure a complete circulation of air, together with the "open" fireplaces already shown.

*Drainage.*—All drains to be constructed of best stoneware pipes, jointed in cement, well ventilated, and kept clear of the building. All rain-water pipes to be disconnected from soil pipes, and all kept outside the building, the latter to be carried up their full diameter to their highest point. All lavatories and sinks to discharge in the open, and to be disconnected from the drainage. The w.c.'s in main building to be either Doulton's, Shanks', or Twyfords', with after-flush. The lavatories to be fitted with Sir William Thompson's taps, having fireclay tops and skirtings. Inspection caps to be provided to the traps of all fittings.

In the arrangement of the drainage, as briefly described, we would ask you to accept our description as enumerating principles only, and not as a perfected scheme, to be more fully considered and detailed in co-operation with your borough surveyor, should our design meet with your approval.

*Brief Specification of Materials.*—The walls to be carried up in brick. The principal elevation to Wellington-road to be faced throughout with stone (Portland preferred), and the remaining elevations and the two internal courtyards to have stone dressings, with red stock brick (Accrington or Ruabon) for facing generally, as indicated on the drawings. The floors to be of fire-resisting construction. The roofs to be covered with Westmorland green slate, finishing at the apex with a lead roll. The domes to be roofed with lead, the figure of "Justice," shown at the apex of the central dome, to be in bronze. The offices to have pitch pine wood block flooring cut and laid on the quarter. The council suite to have hard floors. We would recommend the council chamber floor to be laid with Cork linoleum for quietness. The vestibules, entrance hall, corridors, public spaces, lavatories, etc., to have marble mosaic floors of simple design. The principal staircase to be in Hopton Wood stone and the others in York stone. The joinery generally to be selected Kauri pine stained and polished, the council and committee-rooms to be in hard wood, either oak or mahogany.

The architects' estimated cost for the building is 60,418*l*.

## HALLYARDS, PEEBLES.

THE old portion of the house of Hallyards was in a dilapidated condition, and had to be entirely demolished.

This old portion had been reroofed and generally tampered with, and an ugly early Victorian addition had been made to the south-east end. At the same time the fine old straight avenue leading from the high road had been abandoned and a new curved approach formed.

The drawing shows the design that was made for an entirely new house on the site of the old. The intention was to reopen the old avenue, and to take an old stone figure of the Black Dwarf that was lying about the grounds and use it as the centre of the small court to the south, past which a stream runs.

On the score of expense, however, and for other reasons, the design had to be modified to the modern addition to the house left standing.

The "Black Dwarf's cottage," with its curious doorway some 3 ft. 6 in. high, is a few hundred yards from the house, and in one of the rooms of the old house of Hallyards Sir Walter Scott wrote the novel which took its title from the Dwarf.

Mr. R. S. Lorimer, A.R.S.A., is the architect.

## ST. ANDREWS, HELSINGFORS.

THIS house was recently completed, the work being carried out by local contractors from the architect's detail drawings.

All the sanitary and other fittings were sent from Scotland, the steam heating installation being carried out by Messrs. Mackenzie and Moncur, of Edinburgh, who sent their own men to Helsingfors to fit up the work.

Mr. R. S. Lorimer, A.R.S.A., is the architect.

## SKETCH FOR A COTTAGE, BECCLES.

THESE were preliminary sketches for a cottage for a lady, which has since been erected on somewhat different lines. The materials proposed were red bricks and tiles and rough cast.

# The Student's Column.

## ARCHES.—II.

EARLY in the eighteenth century the department known as the "Ponts et Chaussées" was established in France, and the more scientific design of arched structures began to be developed. One of the most distinguished of the many able engineers connected with that body was Perronet, who designed and superintended the erection of several admirable bridges. The improvements introduced by the engineers of the Ponts et Chaussées more particularly related to the proportions for the rise of the arch and for the thickness of the piers. Consideration was also given to the form of the soffit, with the object of producing a pleasing effect and providing a maximum waterway.

In previous times the general rule was to make the rise very great in proportion to the span, but in reducing the proportionate rise Perronet and his colleagues went a little too far. For instance, in the bridge of Nemours the rise was no more than one-fourteenth of the span, being only 3 ft. 9 in. in a span of 53 ft. 9 in.

During the same period very little was done in England towards the development of the arch as applied to bridge building. Old Westminster Bridge was commenced in 1738, but the designer, Charles Labelye, was a Swiss engineer. The bridge lasted only 100 years after its completion in 1750, owing to the insecurity of the foundations, which simply rested on the gravel bed of the river. Old Blackfriars Bridge, designed by Robert Mylne, was built in the middle of the eighteenth century, and it also had to be replaced after 100 years' service owing to the insecure condition of the foundations.

It is a curious thing that some of the most notable arches built in this country during the eighteenth century were designed and erected by men who, although having no scientific training, were yet able to realise to a very considerable extent the true principles involved.

Thus, we find that the Pont-y-tu-Pridd across the Taff at Newbridge was built in 1750 by a country mason named Edwards. A sketch elevation of this bridge is shown in Fig. 9. The arch has a clear span of 140 ft., with a rise of 35 ft., and the width of the soffit is 15 ft. 10 in. at the springing, diminishing to 14 ft. 5 in. at the crown. The arch stones are 2 ft. 6 in. deep, and the rest of the ring is of rubble masonry. A previously-erected bridge on the same site had failed owing to the excessive weight of the haunches having forced up the crown of the arch. Hence, in designing the new structure, Edwards pierced the spandrils near the abutments of the arch so as to prevent the likelihood of any similar mishap.

Thomas Telford, also beginning life as a simple mason, built quite a number of stone arches, but none of any great size or special importance.

It is stated by Smiles that an attempt was made to construct a cast-iron bridge at Lyons in the year 1755. One of the arches was actually erected in the builder's yard, but nothing further came of the project. The first cast-iron bridge actually built was designed by Mr. Abraham Darby, the owner of the Coalbrookdale Ironworks. Fig. 10 is an outline of this bridge, which was erected in 1777. The arch is of 100 ft. 6 in. clear span, and consists of two 70 ft. cast-iron ribs, connected at the crown, and with a rise of 45 ft. The floor of the bridge is formed of cast-iron plates, 1 in. thick. A town has grown up around the bridge, and has appropriately taken the name of Ironbridge.

Although the Coalbrookdale Bridge was perfectly successful from the day of its completion, no further venture was made for several years in the direction of replacing stone by iron in arch construction.

In 1787, Tom Paine, the well-known author, offered to build a cast-iron bridge with one arch of 400 ft. span in America; and in 1788 he took out a patent for the construction of cast-iron bridges. Although Paine did not secure any commissions as a bridge engineer, his propaganda were useful in attracting attention to the advantages to be derived from the employment of iron in arch construction.

The next practical step in advance was

evidenced by the erection of the Wearmouth Bridge at Sunderland, designed by Mr. Rowland Burdon, M.P., who also provided the funds necessary for the realisation of his scheme. The bridge, as originally built in 1796, comprised an arch of open cast-iron panels, acting as voussoirs; the clear span was 236 ft., with a rise of 34 ft., and the springings were 95 ft. above the bed of the river, giving a clear headway of 100 ft. above low-water level at the crown of the arch. About 214 tons of cast-iron and 46 tons of wrought-iron were used in the structure.

Here we have one more example of a remarkably bold project devised and carried to a successful issue by an entirely self-educated engineer. Considering the limited amount of information available at that time with regard to cast-iron as a material of arch construction, it is not too much to say that the work of Mr. Burdon—and, let us add, of Mr. Darby—deserved even greater commendation than that of the early builders of masonry arches, who had at disposal the data accumulated during many centuries by their predecessors.

Wearmouth Bridge was repaired and widened at a later date, but after the lapse of more than a century it still serves as the chief means of communication between the northern and southern parts of an important town.

Even at the close of the eighteenth century, there is reason for the assertion that the perception of the properties of the arch was not very much clearer than that attributable to the Romans. Even the introduction of iron did not imply any great increase of knowledge. The Wearmouth Bridge was practically an imitation in iron of the familiar stone arch. True, the superior strength of the material permitted the designer to concentrate it into ribs instead of making a solid arch ring. But this feature was not new, for it had been exemplified in masonry at a much earlier date, when stone ribs were used, being filled in with rough concrete or rubble.

Still, the engineering world was moving forward, for we find that in 1801 Telford seriously made the bold proposal to throw across the Thames a single cast-iron arch with a span of 600 ft. and a rise of 65 ft. A Parliamentary Committee, appointed to inquire into the feasibility of this daring scheme, was chiefly remarkable for the lack of theoretical knowledge displayed by mathematicians and engineers alike. The practical engineer, with a natural aptitude for structural mechanics, and educated in the school of daily practice and experience, was still looked upon as the man from whom the soundest opinion could be obtained.

Telford's scheme came to naught, but he went on in other directions, and in his bridge at Craigellachie, built in 1812, over the Spey (Fig. 11), he marked another important step in the progress of cast-iron arches. This bridge has a span of 150 ft., with a rise of 20 ft., and the design approached far nearer to modern ideals than anything previously attempted.

The opening years of the nineteenth century were characterised by undoubted improvements in the construction of stone arches. John Rennie was the first engineer in the world to recognise the fact that the depth of the voussoirs ought to be proportioned to the pressures coming upon them. In Roman arches the rings were of uniform depth, and in the eighteenth century the voussoirs were often made deeper at the crown than at the springing. Rennie increased the depth of the voussoirs from the crown to the springing, and thus gave to the world a further insight into the correct principles underlying arch construction.

Foremost among the bridges in which this improvement was exemplified were Waterloo Bridge, commenced by John Rennie in 1811, and new London Bridge, erected between 1824 and 1831, under the superintendence of Sir John Rennie, son of John Rennie the first.

London Bridge still deserves to be cited as one of the finest arched structures in existence, although in boldness it is surpassed by bridges constructed centuries ago. The centre arch has a span of 152 ft. with a rise of 29 ft. 6 in., dimensions which fall far below those of the Trezzo arch, erected in the fourteenth century. But in London Bridge we have a splendid example of the masonry arch, appealing with equal force to architects and engineers alike. As may be seen from the drawing reproduced in Fig. 12, the arches are proportioned so beautifully that the excellence of the design must be apparent even to the most casual observer.

In another respect London Bridge affords evidence of substantial improvement, for the foundations of the piers and abutments were laid at a depth of nearly 30 ft. below low water level, thus involving difficulties that were seldom faced by ancient and mediæval bridge builders.

The Grosvenor Bridge over the Dee at Chester, built in 1827-1832, represents the maximum span of any stone arch in this country, this bridge having a single span of 200 ft. and a rise of 42 ft.

The Cabin John Bridge, in America, has the greatest span of any existing masonry arch, the span being 220 ft. with a rise of 57 ft. It carries a 9 ft. diameter conduit and a 20 ft. roadway at a height of 101 ft. above the ravine traversed.

Reverting to the metal arch, we find that even Rennie possessed only an imperfect notion of the theoretical principles involved in this form of construction. Southwark Bridge, completed in 1819, was one of his most important works, with two spans of 210 ft. and one of 240 ft., but the design is distinctly suggestive of stone masonry. Each arch consists of eight cast-iron ribs divided into segments corresponding to the voussoirs of a stone arch, and the bridge has been justly characterised as a heavy and wasteful imitation of stone arch construction.

Numerous cast-iron arches were subsequently built, both in this country and abroad, and even as late as 1871 a bridge of this kind was built at Nottingham with a span of 100 ft., but the development of the suspension bridge about 1820, and of the girder bridge at a later date, had the effect of diverting attention for a time from arched bridge construction.

The first wrought-iron arched bridge was erected at St. Denis in the year 1808; but the employment of wrought-iron in structures of this kind did not become common until after the middle of the nineteenth century, when also much greater knowledge of scientific construction and the strength of materials began to be displayed.

Fig. 9.

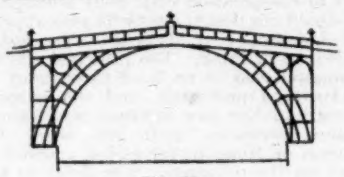

Fig. 10.

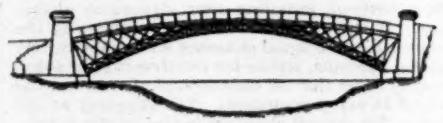

Fig. 11.

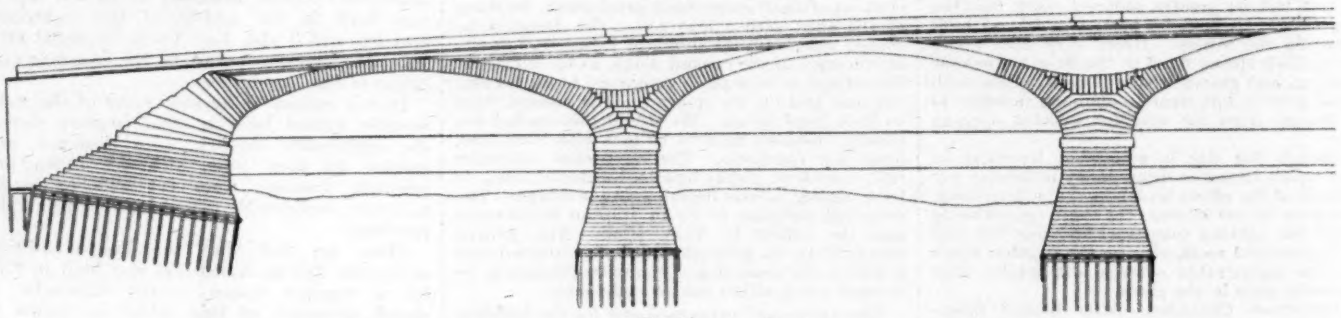

Fig. 12.

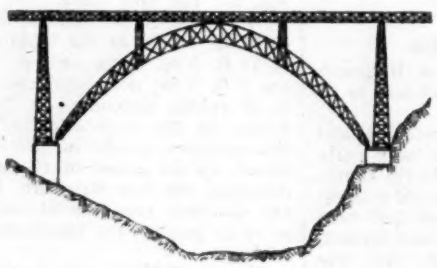

Fig. 13.

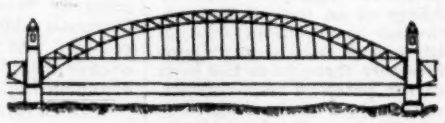

Fig. 14.

In 1866 a notable wrought-iron bridge was built across the Rhine at Coblentz, by MM. Harwich and Sternberg, this structure having three arches of 315 ft. span, with a rise of about 31 ft.

A few years later the St. Louis and Illinois Bridge was commenced across the Mississippi, from the design of Captain Eads, M.Inst.C.E. Although generally classed as a wrought-iron bridge, large quantities of steel were used in the spans, which are formed with ribbed arches, consisting chiefly of steel castings. The centre span is 520 ft. and the two outer spans are each 502 ft. clear; the rise of the centre arch is 47 ft. 6 in. and that of the side arches 46 ft. each. At the time of its completion, in 1874, the St. Louis Bridge was the largest arched span in the world.

All the masonry arches to which we have referred were built in such manner that they were practically block-work structures, composed of rigid voussoirs, and the metal arches hitherto mentioned were solidly connected both at the crown and the abutments.

The first employment of hinges in wrought-iron bridges was exemplified in 1858, in a railway bridge over the St. Denis Canal, in France.

Since 1870 the employment of hinges has become general in metal arches, and, in a modified form, in stone and concrete arches,

This method of construction is extremely convenient, as, when hinges are introduced at the crown and the springings, the calculation of stresses is much simplified.

In Germany many three-hinged stone and concrete arches have been built, up to 277 ft. span, the hinges being formed by sheets of lead about 1 in. thick, and extending over the middle third of the depth of the voussoir joints. The remaining thirds of the joints are left open, and, as the lead is plastic, this mode of construction forms what is equivalent to an articulation.

Within recent years numerous steel arches of great span have been erected in various parts of the world, one reason for the adoption of the arch being the pleasing effect obtained, and another the avoidance of false-works during erection. Most of these structures have been of the two-hinged and the three-hinged type.

In 1877 the Luiz I. Bridge, over the Douro at Oporto, was completed with the remarkable span of 566 ft. and a rise of 146 ft. This fine arch was built from the designs of M. Seyrig, and is of the two-hinged type.

The Garabit Viaduct, in France, built in 1884 by the same engineer, is another good example of the two-hinged steel arch, having a span of 541 ft. and a rise of 186 ft. The viaduct, which is shown in Fig. 13, consists of a crescent-shaped arch formed by two latticed ribs, and carries a railway at the height of 406 ft. above the level of the water below.

The Washington Bridge, over the Harlem River, New York, erected in 1888 from the designs of Mr. Hutton, also exemplifies two-hinged construction. It has a total length of 2,375 ft., and comprises two principal steel arches of 510 ft. span, springing from granite piers, with a rise of 91.7 ft. The ribs of each arch rest on steel pins carried on cast-steel bearings, the ribs being formed of steel plate and having a nearly uniform depth of 13 ft.

The highway bridge across the Rhine at Bonn is a very handsome structure with three arches. The centre arch (Fig. 14) has a span of 614 ft., and the two outer arches are of 307 ft. span each.

The Niagara Falls arch, completed in 1898 from the designs of Mr. Buck, is a two-hinged structure with a span of 840 ft. clear and a rise of 137 ft. The bridge carries a railroad and a highway, in replacement of a suspension bridge previously existing on the same site, and was erected without causing any stoppage of the traffic. This magnificent structure represents the maximum span hitherto attained in any arch.

For many centuries the arch has been largely used in roof construction, and fine examples of every type are to be found in all parts of the world. Since the introduction of steel, the arch has been still more freely used for the same purpose, the three-hinged type being usually adopted in the present day. A familiar example of the non-hinged roof arch is to be found in St. Pancras Railway Station, the span there being 240 ft. In the United States the arch is largely used for roofs, the three-hinged type being generally adopted, and one of the largest spans, 368 ft. with a rise of 206.3 ft., was to be found in the roof of the Liberal Arts Building at the Columbian Exposition.

In these introductory notes we have not attempted to present a complete chronological record of arch building, but simply to bring together a few examples typical of the developments that have taken place during various epochs in the history of the art, and since the art became a science.

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LIVERPOOL CATHEDRAL.—It has been announced that Mr. H. Douglas Horsfall, of Liverpool, has given 5,000*l.* for the purpose of erecting a reredos in the new Liverpool Cathedral. At a meeting of the executive committee of the Cathedral on the 4th inst., a sub-committee was appointed to make the necessary arrangements for the ceremony of laying the foundation-stone, which, it was stated, would probably take place in May or June next.

AN IMPORTANT EXPLANATION.—Mr. Costigan, the secretary of the London Master Builders' Association, writes:—"Mr. James Carmichael builder and contractor, of Trinity-road, Wandsworth-common, has asked me to state that the Mr. Carmichael who was fined 2*l.* last week at the Westminster Police Court for travelling without a railway ticket, is not, and never has been, in any way whatever connected with his firm." We may add that Mr. James Carmichael occupies a high position in the building trade, and is senior vice-president of the London Master Builders' Association.

## *OBITUARY.*

MR. H. DRU-DRURY.—Workmen employed on the South-Eastern and Chatham Railway at Blackheath late on Monday night found the body of a man lying in the four-foot way, and the head some distance from the body. The corpse was subsequently identified as that of Mr. Howard Dru-Drury, twenty-seven years of age, the son of Colonel Edward Dru-Drury, of Maisonette, Woodville-road, Blackheath. Mr. Dru-Drury was in business as an architect at Queen Anne's-gate.

MR. W. STEGGALL.—We regret to record the death, by an accident, on Monday, of Mr. W. Steggall, the builder (trading under the style of Benjamin Goodman). Mr. Steggall was standing on the bridge of a large crane watching the workmen below, when, from some cause or other, to be determined at the inquest (held too late last Thursday afternoon to admit insertion in this issue), the machinery was set in motion, and he was caught by the chain and knocked into the pit below—a depth of some twenty-five feet. He died two hours afterwards from the injuries received in his fall. Mr. Steggall came to London some twenty years ago, and took over the business of Mr. B. Goodman. Seven years ago his son, Mr. William F. Steggall, entered into partnership with him, so that the business will still be carried on on practically the same lines as in the past.

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## *GENERAL BUILDING NEWS.*

PARISH HALL, CHIRK, DENBIGH.—A new Parish Hall has been erected at Chirk as a memorial of the King's Coronation and as a tribute to the memory of the late Queen Victoria. The hall comprises an assembly-room 70 ft. long by 36 ft. wide, with stage, retiring-rooms, and lavatories. In the front are the library, reading-room, and secretary's office and additional lavatory accommodation. On the first floor is a council-chamber, 51 ft. 6 in. by 22 ft. 9 in., and a room for technical classes. A caretaker's house forms one wing of the building. The building is in the Jacobean style, and is built of dressed rubble walling with chiselled dressings, both of local Cefn stone; and the roofs are covered with Ruabon red tiles. A ventilating turret crowns the apex of the roof. The buildings are heated with hot-water pipes. Messrs. Grayson and Ould, of Liverpool, were the architects, and Mr. John Stringer, of Sandbach, Cheshire, the contractor.

BUILDING IN YORK.—The activity in the building trade in York which was seen in 1901-2 has shown some falling off during the past twelve months, and the rapid growth of cottage property on the outskirts seems likely to abate. Speculative builders like to see some probability of a return for their outlay, and new houses are not being snapped up as they were twelve months ago. When the citizens rejected the offer of electric trams they may have done the owners of slum property in the centre of the city a good turn, but they discouraged the putting up of more desirable residences round which there was room for the life-giving air to play. In 1899 the number of dwelling-houses completed was 570; in 1900, 547; in 1901, 441; and in 1902, 351; whilst the total for 1903 up to a recent date was 342. Most of these are small houses planned to meet the requirements of the local authority and with very little space to spare, and the extension of the city has been most marked in the South Bank, Poppleton-road, Heworth, and Burton-lane districts. Several larger works have also made substantial progress during the twelve months. The Haxby-road Board School is practically complete, and the school on Poppleton-road is making rapid progress. Other big undertakings are the North-Eastern Railway offices (which will have cost something like 100,000*l.* when ready for occupation), the extensions at the County Hospital, Rowntree's Cocoa Works, the York Union Bank, and the Post Office, and the alterations to business premises in High Ousegate. Two miles and a quarter of private streets have also been made up.—*Yorkshire Herald.*

BUILDING TRADE, OLDHAM.—The past year has seen but little that is striking in regard to the building and allied trades. The depression in the cotton industry has had its effect upon this, as, indeed, upon all other callings, but, perhaps, in not so marked a degree. Taking it all round, the building trade has this year been quieter than for some years past. The wet and stormy weather has somewhat interfered with outdoor operations, but the winter months which have already elapsed have been very open, and what frost and snow there have been have not seriously hampered progress. During the year some mills have been completed—notably at Royton—and others are in course of erection at Leesbrook, Chadderton, Mills Hill, and Ashton-road, and Waterhead. The effect of these new structures has been to stimulate the building of cottage property in the neighbourhood for about half a mile round, but agents have found it somewhat difficult to let this class of property when in the immediate neighbourhood of the mill, the majority of the operatives preferring to reside a good tram-ride away from the scene of their daily toil. In general, however, there has during the year been a rather better demand for cottage property, but it is found that the town is somewhat overbuilt in this respect, speculative building having gone on in the past to such an extent that there is a depreciation in the class, as well as the number, of tenants. Thus, though, as already intimated, the outlook is improving, agents have not had for a number of years before so many houses empty, and the cotton trade depression has made it very difficult in some cases to get rents in, and comparatively little has been done in regard to the erection of better-class property, this being confined almost entirely to an estate on the Coppice, where a considerable number of villa residences have been put up, but the agents' reports are that in that locality there are more second-class houses empty than has been the case for some time past. In the erection of important buildings in the town nothing has been done during the year, with one notable exception—the Greenhill Electricity Station—whilst the Greenhill bridge reconstruction will probably be commenced almost immediately. During the year there has also been completed the Hollinwood Board School and the Waterloo Juniors' Board School, while an addition was made to the old industrial school for the accommodation of blind and deaf children. A satisfactory feature is that the year has passed off without any disputes between employer and employé, and employment being fairly steady, it is unlikely there will be any pronounced distress amongst this class of workers. The only trade question on hand now is that of a notice which has been given to operative masons from the masters' organisation to the effect that an alteration will be made in the working hours, which will be reduced during the winter months. This notice must be given six months ahead, so that it will not take effect during the present winter, and no reply has as yet been received from the operatives' organisation.—*Oldham Standard.*

INFIRMARY, BURY WORKHOUSE, LANCASHIRE.—The Bury Board of Guardians have resolved that the work of building a new infirmary at the union workhouse should be proceeded with at once, and that the tender of Mr. James Byrom, of Bury, for 20,699*l.* should be accepted. Accommodation will be provided in the new building for 128 beds.

BUILDING IN NEWCASTLE.—Again there has been a busy year in the building trade of Newcastle, and the operations conducted have not been restricted to reconstruction of big blocks in the centre of the city, but have extended also to the outskirts, where residential premises have been put up on a very extensive scale, and the suburban districts have been enriched by churches and schools. Newcastle, unlike many of our cities, has for some sixty years been overtaking the vast building projects of Richard Grainger, whose systematic work in the centre of the town provided shops and business premises greatly in excess of the needs of the period. That the work was in the right direction time has proved, and new shops, offices, and warehouses as roomy and elegant have been reared in all parts of Newcastle, and in some instances Grainger's work has been modernised according to later requirements.—*Newcastle Journal.*

BUILDING IN ABERDEEN.—The building trade in Aberdeen during the year has been in a better condition than could have been anticipated. There have been no trade disputes in the building industry, for masters and men have come to the resolution to settle disputes as to wages or other matters affecting the interests either of employers or employees by means of arbitration. So far as actual working operations are concerned the year just closed has not been favourable. The proportion of rainy and unsuitable days has been large, not only interrupting the work and delaying all those who are dependent upon building operations, but preventing so satisfactory a job being made.

GLASGOW BUILDING TRADE.—The building trade has had a long run of prosperity, but, like the majority of industries, it gives indications of having spent itself. For years the tendency to speculative building, and the great demand for houses of a modern kind on the outskirts of the city has given builders and the allied trades an almost unprecedented amount of work, until the supply threatens to exceed the demand. The growing number of unlet houses in the city gradually served as a warning to builders to stay their hands, and for the official year ending August last the output, compared with the previous year, has declined by half a million pounds. This slackening has continued ever since, but not in any very marked degree. But, with a big reserve

of housing accommodation now available, it is fully expected that the building industry will for a time pass through a much quieter period. Masters do not regard the Housing Commission as a factor to be seriously considered in the problem. They simply realise that the demand for houses of a smaller kind—one and two room and kitchen houses—has been met, and, with trade generally rather dull and the outlook unpromising, builders acknowledge that everything points to a period of quietness in their trade also.—*Glasgow Evening News.*

BUILDING IN BIRMINGHAM.—If the number of new buildings erected in Birmingham during the past year has not been so great as that recorded in some previous years, the last twelve months have witnessed the completion, commencement, or development of several important undertakings of a character calculated to add to the architectural features of the city. In attempting to compile a record of the chief new buildings of the year, one is confronted with the difficulty that it seldom happens that a large building scheme is entered upon and completed the same year. Many of the undertakings, as a matter of fact, extend over several years. A case in point is the new City Arcades, which, although actually completed during the last twelve months, were commenced four or five years ago. Then, again, there is the new University buildings, which are being constructed at Bournbrook. This undertaking has been in hand over twelve months, and it will probably be another year or two before the scheme is completed. Great progress has been made with the preliminary work, and only last week the Council of the University accepted a tender for the erection of the superstructure, which, it is expected, will involve the expenditure of over a quarter of a million sterling. In other instances the buildings, although begun during last year, are still being proceeded with. To this class belongs the Rowton Houses, the foundation stone of which was laid by Princess Christian on the occasion of her visit in June last. The work is being rapidly pushed forward. With the completion and opening last year of the new Central Hall there was a notable accession to the buildings of Corporation Street. The design of this structure is in the Renaissance style, and it is chiefly built of red terra cotta. A distinguishing feature of the building is the campanile, which rises to a height of 180 ft. and is used as an extract ventilator. The ground floor and basement are arranged for commercial purposes. Another distinguishing feature of the building is the main entrance under the campanile from Corporation-street, on the sides of which are two bas-reliefs in buff terra cotta, one of which represents the historic incident of Wesley's rescue from the fire, and the other of his preaching from his father's tombstone. The great hall has accommodation for more than 2,000 people. It is constructed in the form of an amphitheatre, and has roomy and well-lighted corridors extending round.—*Birmingham Mail.*

LEITH BUILDING TRADE.—In his report on the building trade of Leith in 1903, Mr. Finlay, Burgh Surveyor, states that, contrary to expectation, there has been a very considerable amount of work in hand throughout the year. Fifty-eight warrants were granted by the Dean of Guild Court, as against seventy-six in 1902, and the total value of the buildings for which warrants were given was about 268,000*l.* A large sum has been expended on new warehouses during the year, the most important of the new buildings being the grain elevator at the Edinburgh Dock, a building which, when completed, will measure 160 ft. by 120 ft., 116 ft. high. A large elevator is also in course of erection at Salamander-street. Mr. Finlay states that, judging by the amount of tenement property being erected in the burgh, there is evidently a great demand for houses of this class—particularly for three and four-roomed houses. Tenements are being erected in Sloan-street, Dalmeny-street, Iona-street, Dickson-street, and Buchanan-street, and altogether they will accommodate 240 tenants. The tenements passed by the court during the year will accommodate 401 tenants, and will amount in value to about 100,000*l.* There also appears to be a great demand for self-contained houses and villas. On the whole, the year is said to have been an average one as regards the amount of building undertaken, but there are indications that the coming year will be a quiet one.

MANCHESTER CORPORATION BUILDINGS.—One of the busy departments of the Manchester Corporation during 1903 has been that of the City Architect (Mr. H. Price). Among items within the ken of the department are a number affecting the Sanitary Committee, and of these may be placed first the Blackley Housing Scheme, which provides for the erection of 203 houses. The early spring is to see the completion of 150 of the houses, so far have these progressed. There will be six shops of similar design to the cottages. The houses are rendered necessary in consequence of the displacement of people by the demolition of insanitary property and by various improvement schemes. In designing the Blackley dwellings regard has been had to fitness with the rural surroundings of the locality. Several blocks are in short terraces, and a few are of the semi-detached order, with gardens at the back and front. Then there is the Rochdale-road and Sudell-street housing scheme in hand. The committee also have in view a scheme for the erection of workmen's dwellings on a site almost immediately adjoining the colossal shed of the Corporation Tramways Department in Queen's-road, Cheetham, near the junction of the road with Cheetham Hill-road. The plans have not yet been passed. It has, however, been suggested by the Housing Sub-committee that the workmen's dwellings will not have a frontage to Cheetham Hill-road as many people imagined they were to have, but will be placed in such a position as will prevent the class of property with which that road is associated from being out-countenanced by lower-rented buildings. In Bradford-road, which, like the other housing sites, is in North Manchester, there is to be a set of workmen's dwellings for which plans are in preparation. At Monsall Hospital during the year a shelter has been erected to accommodate about a hundred visitors whilst waiting to see their friends among the patients. A detached house for the residence of the Chief Medical Superintendent has also sprung into existence, and the hospital laundry has received the addition of two drying closets.—*Manchester Courier.*

BUILDING TRADE, BELFAST.—The progress of the building trade during the past year has been somewhat uneventful. One contract, however, attracted a considerable amount of attention—viz., the new Royal Victoria Hospital. The new City Hall is attaining very stately dimensions, and within the vicinity of the City Hall some other fine buildings have been completed, among which may be mentioned the Scottish Provident Buildings and the new branch for the Northern Banking Company, in Donegall-square West. The Ocean Buildings, on the other side of the City Hall, exactly opposite the Scottish Provident, are built in red sandstone in the Gothic style. Not far off, in Donegall-place, new premises have been built. In College-square the new Municipal Technical Institute is gradually assuming shape. Further up Great Victoria-street are two warehouses, one at the corner of Howard-street, the other at the corner of Hope-street. At the other corner of Howard-street the new Assembly Hall is being rapidly pushed forward towards completion. In Wellington-place new offices for the Norwich Union Fire Insurance Company are being erected. The new Cathedral in Donegall-street is assuming a more finished appearance. Making allowance for the fact that the building of small house property has fallen off considerably during the last few years, still, as a whole, the building trade in the year just closed has been fairly satisfactory.—*Northern Whig.*

BUILDING IN NOTTINGHAM.—Despite the fact that depression in some of the local industries has driven a large number of artisans to neighbouring towns and villages, the builder was by no means idle within the city boundary. During the past year 1,630 new houses have been certified for occupation, and over 600 minor alterations to houses and business premises have been carried out. Seventeen new streets have been laid out, principally at Sherwood, Sneinton, and Bulwell. Amongst the principal buildings that have been completed during the year are two Wesleyan chapels—St. Ann's Well-road and Mapperley—a large warehouse in Short-hill, and one in Bayard-lane. Messrs. Goddard, Massey, and Warner's premises, which were destroyed by fire the previous year, have been rebuilt and extended in Traffic-street; Messrs. Coates have built a rope factory at Spring-close, Lenton; a cigar factory has been erected in Queen's Bridge-road, and a warehouse has been built in Woolpack-lane. Messrs. Boots, Ltd., have materially extended their stores in Parkinson-street, and have in hand the erection of a factory in Island-street, London-road, while in High-street they have a block of shop buildings in course of erection. The Nottingham and District Banking Company, Ltd., had their new branch at the corner of Raleigh-street in Alfreton-road completed during the year, and considerable progress has been made with their other new branch in Arkwright-street, while the Joint Stock Bank in Arkwright-street is also nearing completion. New schools in connection with the Roman Catholic Church in London-road have been built, and the Gordon Boys' Home in Cranmer-street is expected to be finished early in the New Year. A further addition to the fine series of shops fronting Long-row is in course of construction. In the ensuing year a number of big new business premises are contemplated in various parts of the city, as well as considerable extensions of existing buildings. Shipstone's Brewery Company are making a big extension of their beer stores at Basford, and the tannery in Albert-street, Bulwell, is also being considerably enlarged. A big block of buildings is to be erected on Lenton Boulevard near the Castle, the site for which has already been cleared, and the box-making works in Plumptree-street are also to be extended.—*Nottingham Express.*

## *SANITARY AND ENGINEERING NEWS.*

BRIGHTON SEA DEFENCES.—The groynes and other sea defences at Brighton having been injured by recent storms, the Works Committee asked the Borough Surveyor, Mr. F. J. C. May, and the consulting engineer to the Corporation, Mr. Philip Lockwood, to report on the subject. Mr. May recommended the erection of a new concrete groyne and a concrete sea wall opposite the Kemp Town slopes. Mr. Lockwood's report is opposed to this advice. He says the cost would be 42,000*l.* at least, and he points out that nearly 90,000*l.* has been spent during the last eight years in groynes and sea defences for Brighton, and the works which have been executed are sufficient to retain a very much larger amount of beach than there is at present. The important question, he says, is how to obtain a sufficient supply of shingle, or other filling material. Shingle is stopped at Hove, Shoreham, Littlehampton, Bognor, Portland, and other places, and 8,000 loads are being carted from the Brighton beach annually for use in the town—over 27,000 loads being taken in 1901 for the foundations of wood paving. He recommends that the removal of sand and shingle from the beach be discontinued. Mr. May, in a second report, reiterates his opinion that new groynes and a sea wall are necessary, and insists that Brighton cannot afford to wait for the shingle to accumulate in a natural way. The committee have decided to do nothing until it has been seen what will be the effect of the non-removal of sand and shingle from the beach.

DOCK AND CANAL WORKS.—If the requisite powers are obtained in the forthcoming session of Parliament, several very large dock and canal works will be carried out in the near future. In connection with the proposed improvements to the Manchester Ship Canal, the engineers estimate that it will cost 71,023*l.* to divert the Mersey by a new cut at Walton Inferior, of which sum 32,000*l.* will be sunk in masonry, concrete, and walling, while the cost of the proposed variation of the level of the bottom of the canal between Letchford Locks and Trafford-road Bridge will be 91,450*l.* If the work is allowed it will mean considerable change in the constitution of the governing body of the concern, for by the Finance Bill of the company the Manchester Corporation are asked to make a large sacrifice of interest on the debentures they now hold to allow 2,000,000*l.* of fresh capital to rank in priority. As a *quid pro quo* in future, eleven directors are to be appointed by the Corporation and ten by the shareholders. A new company is also proposing to spend 396,680*l.* in constructing a dock at Trafford Park in connection with the Manchester Ship Canal. The Humber Commercial Docks and Railway Company put the cost of their proposed new dock at Grimsby at 1,026,855*l.*, beside which the proposal of the Ipswich Dock Commission to spend 26,950*l.* on their property appears insignificant. The Clyde Navigation estimate their expenditure on the Shieldhall Dock at 1,240,494*l.*, and for quays, wharves, and river wall, 491,507*l.* A sum of 100,822*l.* is proposed to be spent on Llanelly Harbour.

EXTENSIVE SEWER WORK AT BETHNAL GREEN.—The Borough Surveyor of Bethnal Green has reported that a large expenditure must soon be incurred in sewer reconstruction. One hundred streets ought to be dealt with at once, at a cost of 20,855*l.*, the items being 35,970 ft. run of 9 in. pipe, 5,520 ft. 12 in. pipe, 1,050 ft. 15 in. pipe, 1,380 ft. 18 in. pipe, 239 man-holes. The Works Committee reported on Tuesday that the works will be required, that they had adopted the Borough Surveyor's report, and were of opinion that the work should be undertaken as promptly as possible.

## *FOREIGN.*

URUGUAY.—It is announced that entries will be received up to April 15, 1904, at the Secretariat of the Legislative Assembly, Monte Video, for an international competition for a Government building which it is proposed to erect in that city. The total cost is not to exceed 700,000 dollars—about 148,750*l.* To the authors of the designs adjudged first, second, and third, in order of merit, prizes of 6,000, 3,000, and 1,500 dollars, respectively, will be awarded.

FRANCE.—M. Couriot, Professor at the Ecole Centrale des Arts et Manufactures, has been

elected President for 1894 of the Société des Ingénieurs, Civiles.—At its last session, the Municipal Council of Paris decided that the No. 4 Metropolitan railway, between St. Germain des Prés and the Porte d'Orléans, now in course of construction, is to have the following eight stations: Place St. Sulpice, Rue de Vangirard, Rue Vavin, Boulevard Raspail, Place Denfert-Rochereau, Rue Mouton-Duvernet, Rue d'Alésia, and Porte d'Orléans.—A museum of Public Hygiene is to be organised on the site of the old "Marché de l'Ave Maria," behind the Paris Hôtel de Ville. It is to include all the contrivances or inventions for the protection of workmen from accidents in the course of their work.—At the last sitting of the Paris Council, several members made an attack on the "Vieux Paris" Committee for, as they asserted, going out of its proper sphere of protecting ancient buildings and interfering in schemes of public improvement which were out of its province.—The demolition of the Galerie des Machines has been postponed for the present.—On the occasion of the joint centenary of Isabey and Raffet there is to be an exhibition of their collected works in the conservatory on the Cours la Reine; the proceeds to be devoted to the erection of a monument to Isabey.—The "Marché du Temple," Paris, is shortly to be demolished.—A new architectural society has been formed in Haute Saône; M. Humbaire, of Vesoul, being the first president.—M. Gustave Rémy, architect, of Nogent-sur-Marne, has obtained an honorary diploma at the International Exhibition of Melun for his designs for artisans' dwellings.—The city of Orléans has opened a competition for a building for a museum of sculpture and painting and a natural history museum. The estimated cost is 1,200,000 francs.—A new entry to the port is to be formed at Dieppe.—By a decree of the President of the Republic, the ancient ramparts which constitute the lower *enceinte* of Mont St. Michel are to be made over to the ownership and care of the Service des Beaux-Arts.—A stone bridge is to be built over the Rhone between Avignon and Villeneuve, in place of the existing one.—The municipal council of Bordeaux have definitely adopted the scheme for public improvements, among which will be the construction of a large avenue connecting the Place de la Comédie with the Gare Saint Jean, at an estimated cost of 27 million francs.

## *MISCELLANEOUS.*

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. E. Jenkin Williams, architect, has removed his offices from 31, High-street to 14, Dumfries-place, Cardiff.—Messrs. Barnes-Williams, Ford, and Griffin, architects, have dissolved partnership. Mr. Barnes-Williams retires from general practice, but will be available for consultation. He will complete such matters as are at present in his personal charge. Mr. Ford retired from the partnership on August 1 last upon his accepting the post of District Surveyor of West Wandsworth. Mr. Alfred Griffin will continue the practice at 30, Coleman-street, E.C., and 24, Railway-approach, London Bridge, S.E., and will receive and pay all debts due to and owing by the late firm.—Messrs. Manlove, Alliott, and Co., mechanical engineers, of Nottingham, have removed their London office from 57, Gracechurch-street to 41 and 42, Parliament-street, Westminster, S.W.—The Leeds Fireclay Company (Leeds) announce that Mr. A. Barrett, who has been their secretary for fourteen years, has been appointed managing director and deputy-chairman; Mr. B. J. W. Lone has been elected a director and appointed to control the sales department in London and the south; and Mr. H. J. Boot has been appointed secretary of the company.—The partnership between Messrs. Gething and Grice, stone and granite merchants, has been dissolved, Mr. Grice having purchased all Mr. Gething's share and interest in the late business, which will be continued by him under the style of "Grice and Co."

PORTLAND CEMENT IN CANADA.—Canadian journals to hand record that the first circular cement kiln of the International Portland Cement Company, of Hull, Ontario, was formally installed a few days ago by the Governor-General, Lord Minto. The International Company's plant, when completed, will cover seven acres with its buildings. They have 110 acres of clay land and 220 acres of cement rock land immediately beside the works, and so arranged that the natural product will be brought into the factory by carriers and conduits with a minimum amount of labour.

INTERNATIONAL SOCIETY OF SCULPTORS, PAINTERS, AND GRAVERS.—This Society will hold a reception on Monday evening, January 11, at 9.30 p.m., in the New Gallery, on the occasion of the opening of their Fourth Exhibition in London. Monsieur A. Rodin, the newly-elected President, will receive the guests of the Society.

DRYING COAL FOR CEMENT KILNS.—The extensive application of coal dust in the firing of rotary kilns in cement manufacture has attracted considerable attention to the best means for pulverising coal to the required degree of fineness. In order to carry out this process successfully and economically, the material should not contain more than one per cent. of moisture, as it is found that the output of a mill when the material contains not more than this percentage is double the output that can be obtained when the coal contains two per cent. of moisture. It is always important to get rid of the surplus moisture without the loss of volatile constituents, and the difficulty attending this operation is increased by the fact that no two samples of coal are alike, some coals giving up their moisture far less readily than others. It has been found that coals in which the ash is largely composed of silica dry easily and thoroughly, while those in which the ash contains a high proportion of lime or clay are correspondingly difficult to dry. It is very important that the drying apparatus should be designed so that warm air in ample volume may be brought into contact with every particle of the coal, and this can be accomplished by causing the current of air to pass from the dried to the wet material. As a general rule, coal can be delivered from the drier at a temperature of about 150 degrees Fahr. without loss of volatile constituents. If the temperature be increased to 225 degrees Fahr., there is generally a loss of gas, and the latter temperature cannot be recommended in practice. The fan used to remove the saturated air generally has the effect of carrying off from three per cent. to five per cent. of the coal dust, but this may be recovered by passing the current through a settling chamber, the walls of which will absorb and retain sufficient heat to prevent condensation from the moisture-laden air.

ARBITRATION.—An arbitration inquiry was commenced on the 5th inst. at the Surveyors' Institution, Westminster, before Mr. H. T. Steward, sole arbitrator, the parties interested being Messrs. Kirk and Randall, building contractors, of Woolwich, and Sir Charles Wyndham. The proceedings had reference to the erection of the New Theatre, St. Martin's-lane, the architect of which was Mr. Sprague. The theatre was built in 1902 and finished at the beginning of last year. Disputes arose between the contracting parties, and Sir Charles Wyndham took possession of the building in December, 1902, and had the work completed. Law proceedings then arose, and it was decided that all matters in dispute should be referred to Mr. H. T. Steward as arbitrator. The claim was for moneys not paid and for wrongful ejection from the building, and there were counter-claims having reference to the completion of the theatre and to the work not having been completed within the contract time. Mr. English Harrison, K.C., and Mr. Clavell Salter apeared for the builders; and Mr. Spencer Bower, K.C., and Mr. Rose-Innes for Sir Charles Wyndham.

THE LONDON MANUAL.—The London Manual for 1904, edited by Mr. R. Donald, and published by Edward Lloyd, Ltd., is the eighth yearly publication of a useful handbook containing information concerning public bodies. The work, which contains a number of portraits of public men and a mass of clearly-arranged statistics and facts, has been carefully edited and is well up to date. It is an admirable record of the work and the powers of the many public bodies in London.

BREMNER MEMORIAL, WICK.—There has just been erected at Wick, Caithness, under the auspices of the Wick Town Council, a memorial to the late James Bremner, the civil engineer and harbour builder. The memorial takes the form of an obelisk, and is placed in a position overlooking Wick Bay. The obelisk is of polished granite, having a height of 35 ft. from the ground.

THE LABOUR MARKET IN THE COLONIES.—The January circular of the Emigrants' Information Office states that in *Canada* the building, metal, engineering, shipbuilding, and manufacturing trades generally continued busy throughout last year, and skilled men, such as carpenters, bricklayers, painters, plumbers, blacksmiths, ironmoulders, printers, boilermakers, woodworkers, lathers, waggon makers, coopers, iron and brass workers, etc., had no difficulty in procuring work. The demand has been such that experienced men, arriving even at this season of the year, would find work in indoor trades, but they should possess a little money on landing. In *New South Wales* the demand for labour has somewhat improved, but it is still small. In *Victoria* there is no demand for labour, and many persons have left the State owing to the depression. Speaking generally, no working man is advised to go to *South Australia* at the present time unless he is specially skilled in his trade, or has friends to go to, or has sufficient money to live on at first. The returns from *Queensland* for the quarter ending September 30 last show as follows:—There was no demand in the north except for some mechanics, general labourers, and female servants at Charters Towers, Townsville, etc. There was a demand in the central districts for general labourers and a few agricultural hands; there was a demand in the south for mechanics, agricultural labourers, and especially for general labourers. In no part of Queensland was there a demand for miners. In *Western Australia* there was a demand for mechanics in the building or other trades at Kalgoorlie, Boulder, Geraldton, Bunbury, Beverley, and Northam; at Coolgardie, Kanowna, and Albany the supply of all kinds of mechanics was excessive, and at Perth and Fremantle the supply was sufficient in the building trades, except for bricklayers, and excessive in other trades; at other places the supply was sufficient. The supply of miners was sufficient everywhere except at Kalgoorlie, Boulder, and Nannine, and at Kanowna and Cue was excessive. In *Tasmania* there is some demand on the west coast for miners and mechanics. In *New Zealand* nearly all trades are well employed; carpenters, coach and carriage workers, blacksmiths, wheelwrights, plumbers, painters, bricklayers, and especially saw-millers have no difficulty in obtaining work. No persons are now allowed to land in *Cape Colony* unless they have secured definite employment in the Colony and possess £20 on arrival. The labour market is overstocked owing to the large numbers of new arrivals, and a great many mechanics and labourers are unable to obtain work. There is, therefore, now no opening for mechanics in the building or other trades, and all persons are warned against going at the present time, unless they go out to situations engaged for them or have means of their own sufficient to keep them for some months. No one can enter the *Transvaal* without a permit, and persons are warned against going there at the present time in search of work. The building trades have become slacker, and the supply of labour is more than sufficient. Many mechanics, and especially unskilled workmen, are out of employment.

THE THAMES STEAMBOAT SERVICE.—For several years past the London County Council has unsuccessfully attempted to obtain the necessary powers to establish an efficient steamboat service on the Thames, and in the forthcoming session Parliament will be asked to consider two proposals having this aim in view. One is the Council's own bill, which follows the lines of those previously deposited, except that this year power will be asked for issuing combined tramway and boat fares. The second bill is entitled the "Thames Steamboat Service," and is being promoted by the Thames Steamboat Company, which was incorporated in 1897 to "acquire the fleet of steamers and piers and landing-places on the river Thames belonging to the Victoria Steamboats Company, Ltd., who, together with their predecessors, had carried on a service of steamers for passengers on the river Thames for the previous sixty years." The company has a fleet of thirty-six steamers, piers at Battersea and Putney, and are the lessees of other piers, but they allege that, owing to being hampered by the inconvenient situation of many of the existing piers, they ceased to run the service in 1901. They now propose to form a trust, consisting of three representatives each of the L.C.C. and the company, and to create a capital of 240,000*l.*, of which 60,000*l.* shall be A stock, 120,000*l.* B stock, and 60,000*l.* C stock. All the stock is to bear interest at the rate of 3½ per cent., and be guaranteed by the London County Council, and the company will take the whole of the A and C stock as payment for their undertaking. This bill is, of course, being strongly opposed by the L.C.C.

THE CITY OF LONDON LYING-IN HOSPITAL.—PROPOSED NEW BUILDINGS.—At a recent special court the governors adopted a report prepared by the committee of management, in which it was stated that the foundations and structure of the existing hospital buildings had been seriously injured by the construction by the Great Northern and City Railway Company of a tube railway in close proximity thereto. Some protracted litigation ended in the company's paying them a sum of 3,000*l.* in respect of the damage. Having obtained tenders for the work of reparation and for some necessary alterations and improvements, they found that the lowest tender far exceeded that amount. The committee thereupon resolved to recommend that, having regard to the highly unsatisfactory state of the older portion of the buildings, it would be advisable to altogether replace such portion, rather than to spend money upon partial restoration and attempted improvements of a structure which, in the opinion of their medical staff, had become inadequate to meet modern requirements. Moreover, the fabric was pronounced eighteen months ago to be in an unsafe condition. The hospital stands at the corner of Old-street and City-road, upon a site leased from St.

Bartholomew's Hospital. The older buildings were erected after Robert Mylne's plans and designs in 1771-3, twenty years after the foundation of the charity at Shaftesbury, otherwise known as Thanet House (built by Inigo Jones) in Aldersgate-street. The hygienic and ventilating arrangements are now obsolete, and a considerable portion of the fabric stands twenty-six flushing boxes. Probably further on the soil without any intervening cellars or arches.

DESTRUCTIVE FIRES.—In the early morning of December 29 a fire that broke out in the roof of the large hall of the Town Hall at Teddington, resulted in the complete destruction of all but the outer walls, with their connecting girders of the building. The block, triangular on plan, comprised the original parochial offices erected at a cost of about 30,000*l.* in 1886, and since used by the Urban District Council and the Justices of the Spelthorne Division of the county; the Bijou Theatre of Varieties on the floor above; the club-room, on the top floor, of the local Jubilee Club; and the nine shops on the ground floor. It is stated that the loss is covered by insurance.—On the previous day Hanley Castle, near Upton, in Worcestershire, with its valuable contents, the property of Sir Edmund Lechmere, was consumed by fire during the absence of the tenants. The mansion, covering one acre of ground, stands on the site and within the old moat of the castle, which from the fifteenth century belonged successively to the Nevilles, Earls of Warwick, the De Spencers, and the Lechmeres. Of the original castle the last portion, a tower, was taken down one hundred years ago, when the stones were used for repairing the bridge across the Severn at Upton, which had been built *temp.* James I. In the fifteenth century the Earl of Warwick rebuilt the nave of the parish church of St. Mary, where, in the north chancel-aisle, are several memorials, 1568-1829, of the family and ancestors of the late Sir Edmund A. H. Lechmere, Bart., for whom Street restored the church in 1858.—In the night of December 28, the Grange at Earl's Barton, Northamptonshire, the residence of Mrs. H. C. Hornby, upon the improvement of which a large sum was recently expended, was totally burned, at an estimated loss of some 35,000*l.*

PROPOSED DEMOLITION OF AN OLD CITY CHURCH.—By the bill being promoted by the St. Bartholomew's Hospital authorities this session, power is asked to demolish the Church of St. Bartholomew the Less, and to merge the parish into that of St. Bartholomew the Great. At present the whole of the ecclesiastical parish, with the exception of one house, is within the precincts of the hospital, and there are few, if any, parishioners of the parish other than those employed in or connected with the hospital. It is provided that the monuments in the church shall not be disposed of, but shall be placed in the chapel of the hospital. The church was originally the chapel belonging to "the House of the Poor, commonly called St. Bartholomew's Hospital," but after the dissolution of the religious establishments by Henry VIII. it was made a parish church for those who inhabited the precincts of the hospital. At the time Stow made his survey the church contained many monuments and brasses of the fifteenth and succeeding centuries, and some of these have been preserved. Towards the end of the eighteenth century (says Mr. George Godwin in "Churches of London") it appears to have fallen into decay, and in the year 1789 George Dance, who was then the architect and surveyor to the hospital, was directed by the governors to make certain alterations and repairs, on which occasion Dance, having first ruthlessly destroyed the interior of the old building, constructed almost a new church, forming an octagon within the original square plan. The old walls were preserved, and the square tower, which still remain. Within a comparatively short space of time the interior became affected with dry rot to an alarming extent, and in 1823 a general rebuilding was commenced under the direction of Thomas Hardwick, who removed the whole of the timber construction, and reinstated it with stone or iron, leaving the plan strictly the same, but entirely altering the details. The church contains a tablet in memory of the wife of Thomas Bodleius, founder of the Bodleian Library at Oxford.

## PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

24,279 of 1902.—R. B. C. DOUGLAS: *Lathe Turning Machines for the Feet of Chairs, Table Legs, and such like.*
In lathe-turning machines, such as "back knife" lathes, an attachment consisting of slidable guards and protectors actuated by a hand lever, which is fulcrumed to the guide frame of the attachment, and connected to the guards or protectors by connecting links.

635 of 1903.—G. BILLAM: *Draught Producer for Fires, Chimneys, and other Ventilating Purposes.*
A draught producer for fires, chimneys, and ventilating purposes, comprising in combination, a horizontal channel below the hearthstone, a vertical pipe at the end of said horizontal channel, projecting from the hearthstone, a piece of wire gauze closing the upper end of such channel, a joint at the upper end of the vertical cylinder, a vertical pipe adapted to be placed on said vertical cylinder, a fan-shaped mouthpiece at the top of said vertical pipe standing at an angle to said vertical pipe and turned towards the fireplace, and a valve in said vertical pipe for regulating the draught in the draught producer.

2823 of 1903.—R. W. ODDY: *Domestic Fire Ranges.*
In domestic fire ranges a shallow hot-air chamber, or box, applied at the rear of the oven or boiler, and having an opening at its upper end communicating with the hollow top or exit flue, said opening being controlled, or the area thereof regulated, by a damper or sliding plate.

2971 of 1903.—I. H. ELLINGTON: *Combined Folding Table and Cabinet.*
A combined folding table and cabinet, in which the folding table, or top, turns on a central vertical fulcrum, and in which the cabinet is provided with trays or drawers, or both, that are adapted to be pulled out and then to rest on fall-down end-flaps, which are hinged to the ends of the cabinet.

3052 of 1903.—F. W. ADAMS: *Casement Stays.*
A casement stay, consisting in the combination with the rod of a pivoted guide box through which the rod passes, and of a gravity locking lever pivoted in the guide box, and provided with a projection adapted to engage with any one of a series of slots in the rod.

3100 of 1903.—A. FOSTER: *Reversible Drawback Latches and Locks.*
A drawback latch or lock, consisting of a slider formed with a portion which passes through an endway slotted opening formed through the front of the case, with a portion which lies against the inner face of the front plate, and a latch bolt which is a sliding fit between the front and back plates of the case, and is thereby prevented from moving sideways within the case, the said slider and bolt being formed each with a portion, of which one is detachably engaged with the other by merely putting the parts together without subsequent manipulation, and the said bolt being constructed so that, when reversed, it will correspondingly engage with the slider, and the slider being constructed to come against the side of the bolt while it is also against the inner face of the front plate, and being thereby maintained in position sideways entirely by the front plate and bolt.

3510 of 1903.—J. LAMBERT: *Letter-boxes.*
This invention relates to letter-boxes applicable to doors of houses, offices, and like positions, and relates more particularly to letter-boxes for doors to which the ordinary letter-box is inapplicable on account of its size, the object of the invention being the production of a collapsible letter-box, which is expanded to admit of letters being inserted whenever the letter plate or flap is operated, and which closes automatically when the letter-plate or flap is released.

11,665 of 1903.—J. SHERWIN: *Domestic Fireplaces.*
A domestic fireplace, consisting in the combination with the ash-pit of an ante-chamber or air pit, said ante-chamber or air pit being so placed, fixed, or constructed as to be capable of receiving the ashes from the hearth, admitting air underneath the fire, and allowing for the easy removal of the ashes from below the fire, if desirable, whilst the fire is burning.

13,766 of 1903.—A. E. BUCK: *Rests for Grindstones and Abrading Wheels, and the like.*
Rests for grinding and abrading machines, which consist of a bar, or rest proper, with an open slot at each end, which is free to move upon, and is held in position by, two pins, which are fixed to a rigid bracket, the whole being inclined at a sufficient angle to permit the bar, or rest, to maintain its position with regard to the grinding or abrading machine.

19,730 of 1903.—W. H. FISHBURN: *Window Screen Hangers.*
A window screen hanger, consisting in the combination with slotted brackets attached to the window-frame on opposite sides, and projecting away from the frame, the said slots being closed at the bottom and open at the top, and clips attached to the top of the screen sash and provided with projections adapted to enter the bracket slots.

20,307 of 1903.—E. HUGHES: *Table adjusting Device.*
A table adjusting device, comprising a clamping member, a lower tubular member adjustably connected to the clamping member, a rod having a sliding connection with the lower tubular member, an upper tubular member supported on said rod, a bracket member secured to the table top, and a double-hinged member adjustably adjoining the bracket member and the upper tubular member.

21,677 of 1903.—F. FOUCHE: *Metallic Radiators for Heating and Cooling.*
This invention relates to the construction of metal radiators, or apparatus for effecting exchange of heat, of the kind wherein a fluid (liquid, vapour, or gas) at a given temperature is conveyed to the interior of a series of hollow plates, or radiators, with thin metal walls placed side by side, and another fluid at a different temperature is conveyed into the spaces separating the hollow plates, or radiators, from one another, so that the fluid of lesser temperature absorbs heat from the fluid at the higher temperature, through the metallic walls, until equilibrium of temperature is established. These radiators are superposed or are arranged side by side, and intercommunicate by means of one or more passages.

22,631 of 1903.—F. G. BLAKE: *Outside Shop Blinds for Business and other Premises.*
This invention relates to an improvement in connection with outside shop-blinds for business and other premises, and consists of a facia so fixed on the blind lath as to show, when the blind is down, the name of the firm on the opposite side of the road, which would otherwise be hidden by the shop-blind.

23,177 of 1903.—J. WILLS: *Refrigerator Buildings.*
A refrigerator building, comprising two or more floors, consisting of an elevator shaft having openings at each floor, a closed elevator car open at the front only, and flexible bridging pieces for surrounding the contiguous openings of the car, and elevator shaft to provide a vestibule for closing the stays between the car and the shaft openings.

24,267 of 1903.—C. PRANGEMEIER: *A Tool for Holding Nails while the same are being Driven in.*
A tool for holding nails while the same are being driven in, comprising, in combination, a pair of shanks and cheeks at their front ends, rotatable around a pivot, the upper cheek receiving and covering the lower cheek, oppositely situated vertical grooves in the vertical abutment faces of the two cheeks for the reception of the nail, and a wider bore at the upper ends of the grooves for the accommodation of the nail head, which is protected from direct blows of the hammer by the head portion of the cheek uncovering the same.

13,733 of 1903.—C. E. F. HASSART: *Prismatic Glass Lights.*
A prismatic glass light, comprising on one and the same plate of glass, the combination of prisms, and faces parallel to the smooth face of the plate with symmetrical alternation of the angles of the base of the prisms.

27,445 of 1902.—A. PICKLES & P. R. SEWELL: *Tube, Conduit, Pipe, and the like Cleaners.*
A tube or pipe-cleaning apparatus, consisting in the combination and arrangement of a series of cutters mounted upon the forward end of a central spindle, a sleeve provided with helical vanes, or cleaning brushes, mounted loosely upon such spindle, and a turbine-like propeller, one element of which is secured to the spindle, while the other, or guide-blade portion, is mounted upon a boss that is carried loosely upon the central spindle, and to which a retaining shackle is secured.

2111 of 1903.—J. ERATH: *Construction of Roofs, Ceilings, Floors, Partitions, and the like.*
A method of construction of fire-resisting horizontal or arched ceilings or roofs, dividing floors, with timber or iron framework, and partitions or lining applied to damp walls, or walls serving to keep out heat or cold free from cracks and adapted to deaden sound, the main feature of such method of construction being that, through the medium of bearing irons of special shape, or bars or rods, or of a combination of such irons and bars or rods, the ceilings or the like are suspended, and the walls or the like secured in place, in such a manner that, between the ceiling and timbering, or framework, or between the lining, or facing, and wall, there is enclosed a layer of air.

2765 of 1903.—W. JACKSON: *Method of Slating and Tiling Roofs.*
The slates, or tiles, or other similar roofing materials, to be laid on ordinary battens, the bottom corner slate or tile to be laid at an angle of 45deg., and the remainder to be laid at the same angle, each course to follow on three inches lower than the adjoining one, and the head to abut up to the tail of the slate or

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

tile of the next course above it, to allow for three inches lap. The battens to be laid at such an angle that the top corner of each slate or tile rests on them. Each slate or tile to be holed for nailing 3½ in. from left-hand bottom corner and right-hand top corner, and be 1 in. from sides.

2783 of 1903.—SUTCLIFFE, SPEAKMAN, & Co., LIMITED, & E. R. SUTCLIFFE: *A Method of Making Bricks, and Apparatus therefor.*

This consists in the combination in a brick-making machine of a pug-mill with two brick presses, means for driving the same from a common first-motion shaft and pulleys, a reciprocating mould-box containing two moulds, a drum and lever mechanism for reciprocating same, plungers working in each mould, duplicate cam and lever mechanism for operating the plungers so as to effect the feeding of the material under pressure in one mould while the clot is being pushed out of the adjoining mould, and duplicate cam and lever mechanism to operate sliding rakes for drawing the clots on to the table of each brick press alternately.

4435 of 1903.—J. WETTER (O. HEISE): *Impregnation of Wood.*

A process for the uniform impregnation of wood with any desired quantity of impregnating liquid, which consists in introducing the desired quantity of impregnating liquid into the wood with the aid of pressure, and subsequently treating the wood with saturated or superheated steam, or with hot pressure gases, or with a mixture of steam and hot pressure gases.

20,929 of 1903.—R. F. GILLIN & F. C. BOSTOCK: *Plumbing Systems for Flushing and like Purposes, and Valves and Connections therefor.*

In its complete form the system includes a closed air-tight tank, located at a high point in the building, and supplying the water-closets and urinals on the several floors. Water enters through a pipe from the street main at a low point in the tank, and, by its rise, compresses the air imprisoned above it; the air thus compressed serves to produce a rapid flow or initial rush of water to the closets or urinals when their respective valves are operated, and thus insure thorough cleaning. A normally submerged air valve in the tank controls an air inlet pipe, and serves to prevent the formation of a partial vacuum in the tank when the water level falls by reason of frequent use, and permits the remaining water to escape by gravity if the street pressure is insufficient to maintain the supply. The self-closing flushing valves for the closets are designed to prevent unnecessary waste, and the connections from the valves to the closets and to the supply pipes are so arranged as to permit the closets to be easily installed under all conditions of location without danger of fracture by strains due to inaccuracies in pipe-setting or other causes.

21,411 of 1903.—J. SCULLY: *Fire-proof Buildings.*

This consists in the combination with the walls and floor of a structure of a fire-proof tower within the structure and extending through the floor, a ventilating shaft within the tower and communicating with the interior thereof, means for sealing the tower against the admission of gases from the interior of the structure, a supply and discharge pipe within the ventilating shaft, distributing pipes within the floor, ends thereto extending from the floor, sprays upon the ends and gutters within the floors communicating with the discharge pipe.

21,669 of 1903.—H. SWEETMAN: *Paving.*

A paving for roadways, footways, and the like, consisting in the combination of oblong rectangular granite blocks, longitudinal and cross-cut grooves formed on the upper surface of said blocks, a longitudinal cement joint connecting said blocks together, a bed of mortar similar to York paving upon which the blocks rest, and a concrete foundation for the whole.

23,943 of 1903.—W. H. CALLAN: *Ball Valve for Cisterns.*

This consists in the combination with a cistern of a tube upstanding therein and connected with the water supply; a screw-on or other cap to the said tube, the said cap having a central hole or tube and a conical recess on its inner face, and holes or tubes opening communication between the conical recess and the upper part of the cap, which is preferably made dome-shaped; a spindle surmounted by a floor ball, and slidable in the central hole, and carrying a plug corresponding to the conical recess in the cap, below which plug is a leather or other washer suitably supported.

24,292 of 1903.—R. ILLEMAN: *Apparatus for the Manufacture of Building Blocks, Slabs, and the like.*

The method of making two or more building blocks or slabs at the same time by arranging a corresponding number of moulds side by side in partitions, by which they can be quickly and tightly forced together between uprights, means being provided for pouring cement or plaster into the moulds whilst so held together and for releasing the moulds when the cement or plaster has set and taking them apart sufficiently to enable the blocks or slabs to be removed. The moulds consist of side frames, bolted at their lower ends to a cross-beam, a hinged top having a tongue entering into the space between the top ends of the side-frames, a fastening to hold down the hinged top, and projections where required in the inner edges of the mould to form corresponding recesses in the edges of the blocks or slabs, and openings to receive bars passing across the interior of the mould and round which cement or plaster is poured, so that, when removed, the corresponding hollows are left in the block or slab, handles to facilitate the moving of the parts of the moulds, the sides of the mould representing the flat sides of the block or slab being open, but being closed by plates held tightly against the frame whilst the cement or plaster is poured in, and allowed to set.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

December 18.—By GILLART & SONS (at Portmadoc)

| | |
|---|---|
| Llanfrothen, Merioneth.—"Tyfry Farm," 88 a. 0r. 37 p., f. | £1,330 |
| "Tymawr Farm," 113 a. 1 r. 18 p., f. | 1,800 |
| "Pantywrach Farm" and "Ysguborgoch Holding," 133 a. 3 r. 7 p., f. | 1,900 |
| "Llan Farm," 73 a. 1 r. 23 p., f. | 1,375 |
| "Maesgwyrlleyn Farm," 48 a. 2 r. 36 p., f. | 675 |
| "Caedynewid Fields," 20 a. 0 r. 8 p., f. | 225 |
| "Cennant House" and 9 a. 0 r. 19 p., f. | 465 |
| "Penybwlch Farm," 7 a. 3 r. 3 p., f. | 470 |

December 23.—By Beadle, Wood, & Co. (at East Ham).

| | |
|---|---|
| East Ham.—56 and 58, Burgess-rd., u.t. 997 yrs., g.r. 12*l.*, w.r. 72*l.* 16s. | 500 |
| 5 to 29 (odd), Bartle-av., u.t. 997 yrs., g.r. 52*l.*, w.r. 371*l.* 16s. | 1,900 |

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops; ct. for court.

## MEETINGS.

MONDAY, JANUARY 11.

*Royal Institute of British Architects.*—Mr. Aston Webb, R.A., president, "at Home."

*International Society of Sculptors, Painters, and Gravers.*—Reception in the New Gallery, on the occasion of the opening of the fourth exhibition in London. M. A. Rodin, president, will receive the guests. 9.30 p.m.

*Surveyors' Institution.*—Discussion on Mr. H. T. Scoble's paper on "Industrial Decentralisation, an Important Factor in the Solution of the Housing Problem." 8 p.m.

*Glasgow Philosophical Society (Architectural Section).*—Mr. John Taylor on "Modern House Decoration and Furnishings," illustrated. 8 p.m.

TUESDAY, JANUARY 12.

*Institution of Civil Engineers.*—Mr. A. Millar on "The Electrical Re-construction of the South London Tramways on the Conduit System." 8 p.m.

*Institute of Builders.*—"Conditions of Contract Sub-Committee." 3 p.m.

WEDNESDAY, JANUARY 13.

*Society of Arts (Juvenile Lectures).*—Mr. Eric Stuart Bruce, M.A., on "Navigation of the Air." 5 p.m.

*Edinburgh Architectural Association (Associates' Section).*—Lantern night. 8 p.m.

*Northern Architectural Association.*—Mr. T. J. Gueritte, C.E., on "Reinforced Concrete and its Applications," with lantern illustrations. 7.30 p.m.

THURSDAY, JANUARY 14.

*Institution of Electrical Engineers.*—(1) Adjourned discussion on Mr. P. V. McMahon's paper on "The City and South London Railway: Working Results of the Three-Wire System applied to Traction, &c." (2) Dr. Hans Behn-Eschenburg on "The Magnetic Dispersion in Induction Motors and its Influence on the Design of these Machines." 8 p.m.

*Leeds and Yorkshire Architectural Society.*—Annual dinner, Queen's Hotel, Leeds. 7 p.m.

*Manchester Society of Architects.*—Professor Beresford Pite on "Architecture—Free or Registered," a protest against the Architects' Registration Bill. 6.45 p.m.

FRIDAY, JANUARY 15.

*Royal Institution.*—Rt. Hon. Lord Rayleigh, M.A., on "Shadows." 9 p.m.

*Glasgow Architectural Craftsmen's Society.*—Mr. C. R. Bonn on "Steel Work Construction." 8 p.m.

*Institution of Mechanical Engineers.*—(1) Nomination of Officers for election at the Annual General Meeting on February 19. (2) Paper to be read and discussed: Sixth report to the Alloys Research Committee on "The Tempering of Steel," by the late Sir William C. Roberts-Austen and Professor W. Gowland. 8 p.m.

## PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

### BRICKS, &c.

| | £ s. d. | |
|---|---|---|
| Hard Stocks | 1 16 0 | per 1000 alongside, in river. |
| Rough Stocks and Grizzles | 1 13 0 | " " " |
| Facing Stocks | 2 12 0 | " " " |
| Shippers | 2 10 0 | " " " |
| Flettons | 1 10 0 | " at railway depôt. |
| Red wire Cuts | 1 13 0 | " " " |
| Best Fareham Red | 3 12 0 | " " " |
| Best Red Pressed Ruabon Facing | 5 0 0 | " " " |
| Best Blue Pressed Staffordshire | 4 4 0 | " " " |
| Do. Bullnose | 4 10 0 | " " " |
| Best Stourbridge Fire Bricks | 4 8 0 | " " " |
| GLAZED BRICKS. | | |
| Best White and Ivory Glazed Stretchers | 13 0 0 | " " " |
| Headers | 12 0 0 | " " " |
| Quoins, Bullnose, and Flats | 17 0 0 | " " " |
| Double Stretchers | 19 0 0 | " " " |
| Double Headers | 16 0 0 | " " " |
| One Side and two Ends | 19 0 0 | " " " |
| Two Sides and one End | 20 0 0 | " " " |
| Splays, Chamfered, Squints | 20 0 0 | " " " |
| Best Dipped Salt Glazed Stretchers and Headers | 12 0 0 | " " |
| Quoins, Bullnose, and Flats | 14 0 0 | " " " |
| Double Stretchers | 15 0 0 | " " " |
| Double Headers | 14 0 0 | " " " |
| One Side and two Ends | 15 0 0 | " " " |
| Two Sides and one End | 15 0 0 | " " " |
| Splays, Chamfered, 8quints | 14 0 0 | " " " |
| Second Quality White and Dipped Salt Glazed | 2 0 0 | " less than best. |

| | s. d. | |
|---|---|---|
| Thames and Pit Sand | 7 3 | per yard, delivered. |
| Thames Ballast | 6 0 | " " |
| Best Portland Cement | 29 0 | per ton, delivered. |
| Best Ground Blue Lias Lime | 20 6 | " " |

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime..... 11s. 6d. per yard, delivered.
Stourbridge Fire Clay in sacks 27s. 6d. per ton at rly. dpt.

### STONE.

| | s. d. | |
|---|---|---|
| BATH STONE—delivered on road waggons, Paddington depôt | 1 6½ | per ft. cube. |
| Do. do. delivered on road waggons, Nine Elms depôt | 1 8½ | " " |
| PORTLAND STONE (20 ft. average)— | | |
| Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf | 2 1 | " " |
| White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf | 2 2½ | " " |
| Ancaster in blocks | 1 11 | per ft. cube, deld. rly. depôt. |
| Beer in blocks | 1 6 | " " |
| Greenshill " | 1 10 | " " |
| Darley Dale in blocks | 2 4 | " " |
| Red Corsehill " | 2 5 | " " |
| Closeburn Red Freestone | 2 0 | " " |
| Red Mansfield " | 2 4 | " " |
| YORK STONE—*Robin Hood Quality.* | | |
| Scappled random blocks | 2 10 | per ft. cube, deld. rly. depôt. |
| 6 in. sawn two sides landings to sizes (under 40 ft. super.) | 2 3 | per foot super. " |
| 6 in. rubbed two sides ditto, ditto | 2 6 | " " |
| 3 in. sawn two sides slabs (random sizes) | 0 11½ | " " |
| 2 in. to 2½ in. sawn one side slabs (random sizes) | 0 7½ | " " |
| 1½ in. to 2 in. ditto, ditto | 0 6 | " " |
| HARD YORK— | | |
| Scappled random blocks | 3 0 | per ft. cube " |
| 6 in. sawn two sides, landings to sizes (under 40 ft. super.) | 2 8 | per ft. super. " |
| 6 in. rubbed two sides Ditto | 3 0 | " " |
| 3 in. sawn two sides slabs (random sizes) | 1 2 | " " |
| 2 in. self-faced random flags | 0 5 | " " |
| Hopton Wood (Hard Bed) in blocks | 2 3 | per ft. cube. |
| " " " 6 in. sawn both sides landings | 2 7 | deld. rly. depôt. per ft. super. deld. rly. depot. |
| " " " 3 in. do. | 1 2½ | " " |

### SLATES.

| in. in. | £ s. d. | |
|---|---|---|
| 20 × 10 best blue Bangor | 13 2 6 | per 1000 of 1200 at r. d. |
| 20 × 12 " " | 13 17 6 | " " |
| 20 × 10 best seconds " | 12 15 0 | " " |
| 20 × 12 " " " | 13 10 0 | " " |
| 16 × 8 best " " | 7 0 0 | " " |
| 20 × 10 best blue Portmadoc | 12 12 6 | " " |
| 16 × 8 best blue Portmadoc | 6 12 6 | " " |
| 20 × 10 best Eureka unfading green | 15 2 6 | " " |
| 20 × 12 best Eureka unfading green | 17 2 6 | " " |
| 18 × 10 " " | 12 10 0 | " " |
| 16 × 8 " " | 10 5 0 | " " |
| 20 × 10 permanent green | 11 10 0 | " " |
| 18 × 10 " " | 9 10 0 | " " |
| 16 × 8 " " | 6 10 0 | " " |

### TILES.

| | s. d. | |
|---|---|---|
| Best plain red roofing tiles | 42 0 | per 1000 at rly. depot. |
| Hip and Valley tiles | 3 7 | per doz. " " |
| Best Broseley tiles | 50 0 | per 1000 " " |
| Do. Ornamental tiles | 52 6 | " " " |
| Hip and Valley tiles | 4 0 | per doz. " " |

(*Continued on page* 45).

# COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

*(For some Contracts, &c., still open, but not included in this List, see previous issues.)*

## COMPETITION.

| Nature of Work. | By whom Required. | Premiums. | Designs to be delivered. |
|---|---|---|---|
| Branch Library, Hutchesontown | Glasgow Corporation | Not stated | Not stated. |

## CONTRACTS.

| Nature of Work or Materials. | By whom Advertised. | Forms of Tender, &c., supplied by | Tenders to be delivered |
|---|---|---|---|
| School, &c., Carter Knowle-road, Sheffield | Education Committee | Holmes & Watson, Architects, 38, Church street, Sheffield | Jan. 11 |
| Corrugated Iron School Building, Hengoed | Glamorgan County Council | T. M. Franklin, Clerk to Council, Westgate-street, Cardiff | do. |
| Road Widenings | Ashton-upon-Mersey U.D.C. | F. Hutton, Surveyor, Public Hall, Ashton-upon-Mersey | do. |
| Addition to Schools | Bedford Borough Education Com. | H. Young, Architect, Maitland-street, Maitland-road, Bedford | do. |
| Wood Blocks | Bethnal Green Borough Council | Borough Surveyor, Town Hall, Bethnal Green | do. |
| Granite Kerb and Pitch | do. | do. | do. |
| Sinking a Waterworks Well, &c. | Clay Cross U.D.C. | W. H. Radford, Albion-chambers, King-street, Nottingham | do. |
| 2,347 Yards Iron Pipes | do. | do. | do. |
| Sewering, &c., George-street, Newton Heath | Paving Com., Manchester Corp. | Surveyor's Office, Town Hall, Manchester | do. |
| Sewering, &c., Wilton-street, Newton Heath | do. | do. | do. |
| Draining, &c., Burton-street, West Gorton | do. | do. | do. |
| Draining, &c., Corby-street, West Gorton | do. | do. | do. |
| Draining, &c., Matthews-street, Ardwick | do. | do. | do. |
| Draining, &c., Passage, West Gorton | do. | do. | do. |
| Sewering, &c., Passage, Newton Heath | do. | do. | do. |
| Kerbing, Paving, &c., Theodore-road | Lewisham Borough Council | Surveyor, Town Hall, Catford | do. |
| " " Adamsrill-road (part of) | do. | do. | do. |
| " " Whatman-road | do. | do. | do. |
| Drainage at Cemetery | Southborough U.D.C. | W. Harmer, Surveyor, 137, London-road, Southborough | do. |
| Generating Plant | Glasgow Corporation | W. A. Chamen, 75, Waterloo-street, Glasgow | do. |
| House and Farm Bldgs., Upperclough, Linthwaite | ..... | C. F. Mallinson & Son, Surveyors, Market-place, Huddersfield | do. |
| Wesleyan Sunday School, Skelmanthorpe | ..... | J. Berry, Architect, 3, Market-place, Huddersfield | do. |
| Police Station, Pontnewydd | Monmouth County Council | W. Tanner, F.S.I., County Surveyor, Newport, Mon. | Jan. 12 |
| Stane Skew Bridge, Midgeholme | Cumberland County Council | G. J. Bell, County Surveyor, The Courts, Carlisle | do. |
| Rough How Bridge, Crosthwaite | do. | do. | do. |
| Five Pumping Stations, Saltley, &c. | B'ham Tame & Rea Dis. D'age Bd. | J. D. Watson, A.M.I.C.E., Eng'r's Off., Tyburn Cas., B'wich St., M.R. | do. |
| Road Works, Walford-road, Northwood | Watford R.D.C. | E. Tailey, Surveyor, 9, Market-street, Watford | do. |
| Twelve Houses, Haigh | ..... | R. & W. Dixon, Architects, 5, Eastgate, Burnley | do. |
| *Street Improvement Works | Bromley Boro' Council | Boro' Engineer, Municipal Offices, Bromley | do. |
| *Roadmaking and Paving Works | Willesden District Council | Engineer to the Council, Public Offices, Dyne-road, Kilburn, N.W. | do. |
| Sewering Work, Hollinsend | Handsworth U.D.C. | B. Powell, Surveyor and Engineer, Council Offices, Handsworth | do. |
| Improvement of Main Road, Cadoxton (Neath) | Glamorgan County Council | County Council Offices, Westgate-st., Cardiff | Jan. 13 |
| Widening, &c., Main Rd., nr Bonvilstone, Old Toll H. | do. | do. | do. |
| Widening the Cowbridge, &c., Main Rd., nr Talygarn | do. | do. | do. |
| Draining Main Road at Brynsaddler | do. | do. | do. |
| Curbing in the Llandaff Division | do. | do. | do. |
| 2,700 Tons of Granite | Kingston-on-Thames Corporation | Borough Surveyor, Clattern House, Kingston | do. |
| Two Boilers at Workhouse | Ormskirk Guardians | Engine, Boiler & Employers' Liability In. Co., 12, King-st., Manr. | do. |
| Waterworks (Divisions II. and III.) | Galway U.D.C. | J. Perry, M.Inst.C.E., County Surveyor's Office, Galway | do. |
| Stores | Rochdale Canal Co. | 80, Dale-street, Manchester | Jan. 14 |
| Carnegie Branch Library, Askam | Dalton-in-Furness U.D.C. | W. Richardson, Surveyor, Public Offices, Dalton-in-Furness | do. |
| Section D Pipework | Pontypridd U.D.C. | R. P. Wilson, 66, Victoria-street, Westminster | Jan. 15 |
| 2,600 Yards Gas Mains, Wattstown | Rhondda U.D.C. | O. Thomas, Engineer, Gas and Water Offices, Pentre, R.S.O. | do. |
| Electricity Meters | Belfast Corporation | V. A. H. M'Cowen, City Electrical Engineer, Belfast | do. |
| Institute, Warley Town, Halifax | Mr. A. S. McCrea | Messrs. Walsh & Nicholas, Museum Chambers, Halifax | do. |
| Villa Residence, Chapel-street, Barnsley | ..... | Senior & Clegg, Architects, 15, Regent-st., Barnsley | do. |
| Alterations, Pupil Teachers' Coll. Bldgs., Princess-st. | Manchester Education Committee | W. Windsor, Quantity Surveyor, 37, Brown-street, Manchester | Jan. 16 |
| Metal Breaking and Carting Work | Burgh of Elgin | A. A. Turriff, Burgh Surveyor, Elgin | do. |
| Sludge Steamer | Glasgow Corporation | Office of Public Works, City Chambers, Glasgow | do. |
| Take Down & Rebuild 3 Shops in Taff-st., Pontypridd | Rhondda Valleys Brewery Co. | A. O. Evans, Architect, Pontypridd | do. |
| 7,100 Yards Armoured Cables | Wallasey U.D.C. | J. A. Crowther, Electric Supply Works, Sea View-rd., Liscard | do. |
| Parsonage Home, Tallyllyn | Rev. J. Williams | G. T. Bassett, A.R.I.B.A., Aberystwyth | do. |
| County Police Station, Winchburgh | Linlithgowshire County Council | W. M. Scott, Architect, Linlithgow | Jan. 18 |
| Hartshill Stone | Woodstock R.D.C. | Surveyor, District Council Offices, Woodstock | do. |
| Electric Tram Car Bodies | Manchester Corporation | J. M. M'Elroy, 55, Piccadilly, Manchester | do. |
| Electrical Equipments for Cars | do. | do. | do. |
| Tram Car Trucks | do. | do. | do. |
| *Hard Shepley Stone Landings | M.B of Paddington | Town Hall, Paddington, W. | do. |
| *Making up and Paving New Streets | Camberwell Borough Council | Borough Engineer, Town Hall, Camberwell, S.E. | do. |
| Private Street Works | Chadderton U.D.C. | A. W. Cox, Surveyor to Council, Chadderton, Oldham | Jan. 19 |
| Steel Girder Footbridge, Grimshaw-lane | do. | do. | do. |
| New Street Works | Horwich U.D.C. | Surveyor, Council Offices, Horwich | do. |
| Gravel Flint, Granite, &c., Kelvedon | Braintree R.D.C. | E. H. Bright, Surveyor, Dodds Hall, Braintree, Essex | do. |
| Pulling Down & Rebldg. Old Royal Oak H'l, Barnsley | Messrs. J. Fox & Sons | Tennant & Bagley, Architects, Pontefract | do. |
| *Mercantile Marine Office, Royal Albert Dock | Commiss. of H.M. Office of Wks. | J. B. Westcott, H.M. Office of Wks, Storeys Gate, West'ster, S.W. | do. |
| *Erection of Forty-two Houses at Cheltenham | G.W.R. Co. | Engineer, Gloucester Station | do. |
| Iron Tank, Cockshutt's-lane, Oughtibridge | Wortley R.D.C. | G. E. Beaumont, Surveyor, Grenoside, near Sheffield | Jan. 20 |
| Reservoir Works " " | do. | do. | do. |
| Stone, &c., for One Year | B'ham. Public Wks. Committee | G. Price, City Surveyor, Council House, Birmingham | do. |
| Stores for One Year | do. | J. Price, City Engineer, Council House, Birmingham | do. |
| Three Business Premises and One House, Aberfan | ..... | W. Dowdeswell, Architect, Treharris | do. |
| Additions to Sanatorium | Blackpool Sanitary Committee | J. S. Brodie, Borough Engineer, Blackpool | do. |
| *New Free Library, Clarendon-gardens, Ramsgate | Ramsgate Corporation | Town Clerk, Albion House, Ramsgate | do. |
| *Making up and Paving Street | Fulham Borough Council | Borough Surveyor, Town Hall, Fulham, S.W. | do. |
| Street Works, Porth, &c. | Rhondda U.D.C. | W. J. Jones, Engineer and Surveyor, Pentre, Rhondda | Jan. 21 |
| 50 to 60 Tons Iron Pipes | Harrogate Corporation | G. Wilkinson, Corporation Electricity Department, Harrogate | Jan. 23 |
| Convent School, Edgeworthstown | ..... | Very Rev. Canon Martin, Presbytery, Edgeworthstown, Ireland | do. |
| *Restoration of Shaftesbury-road School | East Ham Education Committee | R. L. Curtis, Architect, 120, London Wall, Moorgate-st., E.C. | Jan. 24 |
| 1983 Yards super. of Flagging for Paths | Belfast Harbour Commissioners | G. F. L. Giles, Harbour Engineer | Jan. 25 |
| Widening Railway, Kirkby, Rainford, &c. | Lancashire & Yorkshire Railway | Engineer's Office, Hunt's Bank, Manchester | Jan. 26 |
| Corrugated Iron Shed, &c. | Walthamstow U.D.C. | G. W. Holmes, Engineer to Council, Town Hall, Walthamstow | do. |
| *Alterations and Additions to Royal Mint | Commissioners of H.M. Works, &c. | J. B. Westcott, H.M. Office of Works, Storey's Gate, S.W. | do. |
| *Fire Brigade Station at Kensington | London County Council | Architects' Department, 3, Warwick-street, Charing Cross, S.W. | do. |
| *Supply of Articles and Execution of Works | Chelsea Borough Council | Borough Surveyor, Town Hall, King's-road, S.W. | Jan. 27 |
| Detritus and Screening Chambers, &c., Warley | Oldbury U.D.C. | J. T. Eayrs, M.Inst.C.E., 39, Corporation-st., Birmingham | Jan. 28 |
| Pumping Station, &c., Warley | do. | do. | do. |
| Eight Labourers' Dwellings | Birr U.D.C. | H. Browne, Town Surveyor, Town Hall, Birr, Ireland | Feb. 1 |
| Painting | Lancashire & Yorkshire Railway | Engineer's Office, Hunt's Bank, Manchester | Feb. 8 |
| *Erection of Epileptic Homes, &c. | Chorlton & Manchester Asyl. Com. | Giles, Gough, & Trollope, 28, Craven-street, Charing Cross, W.C. | Mar. 4 |
| Parish Church, Claremorris, Tuam, Co. Mayo | Venerable P., Kilkenny | D. W. Morris, Surveyor, Dublin | No date |
| Extension to Works, Bagby Fields | G. Bray & Co. | G. F. Bowman, Architect, 5, Greek-st., Leeds | do. |
| Tutor's Residence, Wesleyan College, Headingly | ..... | Danby & Simpson, Architects, 10, Park-row, Leeds | do. |
| Crematorium, Lawnswood Cemetary | Headingly-c.-Burley, Burial Board. | W. S. Braithwaite, Architect, 6, South-parade, Leeds | do. |
| Extension of Post Office, Hawick | Commissioners H.M. Works | H.M. Office of Works, Edinburgh | do. |
| *Alterations, &c., Union Workhouse | Shardlow Guardians | Naylor & Sale, Architects, Irongate, Derby | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Applications to be in |
|---|---|---|---|
| *Clerk of Works | Aylesbury R.D.C. | 3*l.* 3*s.* per week | Jan. 11 |
| Borough Surveyor, Faversham | Town Council | 200*l.* per annum | Jan. 12 |
| Inspector of Nuisances, &c., Faversham | do. | 100*l.* per annum | do. |
| Surveyor | Felixstowe & Walton U.D.C. | 200*l.* | Jan. 16 |
| *Clerk of Works | Hearts of Oak Benefit Society | Not stated | do. |
| *Architectural Assistant | Shanghai Municipal Council | 300 Shanghai Taels per month | No date |

*Those marked with an asterisk (*) are advertised in this Number.* *Contracts*, iv. vi. viii. x. *Public Appointments*, xix.

**TILES** (*continued*—

| | s. | d. | | |
|---|---|---|---|---|
| Best Ruabon red, brown or brindled do. (Edwards) | 57 | 6 | per 1000 | at rly. depot. |
| Do. Ornamental do. | 60 | 0 | ,, | ,, ,, |
| Hip tiles | 4 | 0 | per doz. | ,, ,, |
| Valley tiles | 3 | 0 | ,, | ,, ,, |
| Best Red or Mottled Staffordshire do. (Peakes) | 51 | 9 | per 1000 | ,, ,, |
| Do. Ornamental do. | 54 | 6 | ,, | ,, ,, |
| Hip tiles | 4 | 1 | per doz. | ,, ,, |
| Valley tiles | 3 | 8 | ,, | ,, ,, |
| Best "Rosemary" brand plain tiles | 48 | 0 | per 1000 | ,, ,, |
| Best Ornamental tiles | 50 | 0 | per 1000 | ,, ,, |
| Hip tiles | 4 | 0 | per doz. | ,, ,, |
| Valley tiles | 3 | 8 | ,, | ,, ,, |

**WOOD.**

| | At per standard. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in. | 15 | 10 | 0 | 16 | 10 | 0 |
| Deals: best 3 by 9 | 14 | 10 | 0 | 15 | 10 | 0 |
| Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in. | 11 | 10 | 0 | 12 | 10 | 0 |
| Battens: best 2½ by 6 and 3 by 6 | 0 | 10 | 0 | less than 7 in. and 8 in. | | |
| Deals: seconds | 1 | 0 | 0 | less thn best | | |
| Battens: seconds | 0 | 10 | 0 | ,, ,, | | ,, |
| 2 in. by 4 in. and 2 in by 6 in. | 9 | 0 | 0 | 9 | 10 | 0 |
| 2 in. by 4½ in. and 2 in. by 5 in. | 8 | 10 | 0 | 9 | 10 | 0 |
| Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in. | 0 | 10 | 0 | more than battens. | | |
| ¼ in. | 1 | 0 | 0 | ,, | | |
| Fir timber: best middling Danzig or Memel (average specification) | At per load of 50 ft. 4 | 10 | 0 | 5 | 0 | 0 |
| Seconds | 4 | 5 | 0 | 4 | 10 | 0 |
| Small timber (8 in. to 10 in.) | 3 | 12 | 6 | 3 | 15 | 0 |
| Small timber (6 in. to 8 in.) | 3 | 0 | 0 | 3 | 10 | 0 |
| Swedish balks | 2 | 15 | 0 | 3 | 0 | 0 |
| Pitch-pine timber (30 ft. average) | 3 | 5 | 0 | 3 | 15 | 0 |
| JOINERS' WOOD. White Sea: first yellow deals, | At per standard. | | | | | |
| 3 in. by 11 in. | 23 | 0 | 0 | 24 | 0 | 0 |
| 3 in. by 9 in. | 21 | 0 | 0 | 22 | 10 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 17 | 0 | 0 | 18 | 10 | 0 |
| Second yellow deals, 3 in. by 11 in. | 18 | 10 | 0 | 20 | 0 | 0 |
| ,, ,, 3 in by 9 in. | 17 | 10 | 0 | 19 | 0 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 13 | 10 | 0 | 14 | 10 | 0 |
| Third yellow deals, 3 in. by 11 in. and 9 in. | 15 | 10 | 0 | 16 | 10 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 11 | 10 | 0 | 12 | 10 | 0 |
| Petersburg: first yellow deals, 3 in. by 11 in. | 21 | 0 | 0 | 22 | 10 | 0 |
| Do. 3 in. by 9 in. | 18 | 0 | 0 | 19 | 10 | 0 |
| Battens | 13 | 10 | 0 | 15 | 0 | 0 |
| Petersburg: second yellow deals, 3 in. by 11 in. | 16 | 0 | 0 | 17 | 0 | 0 |
| Do. 3 in. by 9 in. | 14 | 10 | 0 | 16 | 0 | 0 |
| Battens | 11 | 0 | 0 | 12 | 10 | 0 |
| Third yellow deals, 3 in. by 11 in. | 13 | 10 | 0 | 14 | 0 | 0 |
| Do. 3 in. by 9 in. | 13 | 0 | 0 | 14 | 0 | 0 |
| Battens | 10 | 0 | 0 | 11 | 0 | 0 |
| White Sea and Petersburg:— First white deals, 3 in. by 11 in. | 14 | 10 | 0 | 15 | 10 | 0 |
| ,, ,, 3 in. by 9 in. | 13 | 10 | 0 | 14 | 10 | 0 |
| Battens | 11 | 0 | 0 | 12 | 0 | 0 |
| Second white deals, 3 in. by 11 in | 13 | 10 | 0 | 14 | 10 | 0 |
| ,, ,, 3 in. by 9 in. | 12 | 10 | 0 | 13 | 10 | 0 |
| ,, ,, battens | 9 | 10 | 0 | 10 | 10 | 0 |
| Pitch-pine: deals | 16 | 0 | 0 | 18 | 0 | 0 |
| Under 2 in. thick extra | 0 | 10 | 0 | 1 | 0 | 0 |
| Yellow Pine—First, regular sizes | 33 | 0 | 0 | upwards. | | |
| Oddments | 22 | 0 | 0 | 24 | 0 | 0 |
| Seconds, regular sizes | 24 | 10 | 0 | 26 | 10 | 0 |
| Yellow Pine oddments | 20 | 0 | 0 | 22 | 0 | 0 |
| Kauri Pine—Planks, per ft. cube | 0 | 3 | 6 | 0 | 4 | 6 |
| Danzig and Stettin Oak Logs— Large, per ft. cube | 0 | 2 | 6 | 0 | 3 | 6 |
| Small ,, ,, | 0 | 2 | 3 | 0 | 2 | 6 |
| Wainscot Oak Logs, per ft. cube | 0 | 5 | 0 | 0 | 5 | 6 |
| Dry Wainscot Oak, per ft. sup. as inch | 0 | 0 | 7 | 0 | 0 | 8 |
| ¼ in. do. do. | 0 | 0 | 6½ | | — | |
| Dry Mahogany—Honduras, Tabasco, per ft. sup. as inch | 0 | 0 | 9 | 0 | 0 | 11 |
| Selected, Figury, per ft. sup. as inch | 0 | 1 | 6 | 0 | 2 | 0 |
| Dry Walnut, American, per ft. sup. as inch | 0 | 0 | 10 | 0 | 1 | 0 |
| Teak, per load | 17 | 0 | 0 | 21 | 0 | 0 |
| American Whitewood Planks— per ft. cube | 0 | 4 | 0 | | — | |
| Prepared Flooring— | Per square. | | | | | |
| 1 in. by 7 in. yellow, planed and shot | 0 | 13 | 6 | 0 | 17 | 6 |
| 1 in. by 7 in. yellow, planed and matched | 0 | 14 | 0 | 0 | 18 | 0 |
| 1¼ in. by 7 in. yellow, planed and matched | 0 | 16 | 0 | 1 | 1 | 6 |
| 1 in. by 7 in. white, planed and shot | 0 | 11 | 6 | 0 | 13 | 6 |
| 1 in. by 7 in. white, planed and matched | 0 | 12 | 0 | 0 | 14 | 0 |
| 1¼ in. by 7 in. white, planed and matched | 0 | 14 | 6 | 0 | 16 | 6 |
| ¾ in. by 7 in. yellow, matched and beaded or V-jointed brds. | 0 | 11 | 0 | 0 | 13 | 6 |
| ¾ in. by 7 in. do. do. do. | 0 | 14 | 0 | 0 | 18 | 0 |
| 1 in. by 7 in. white do. do. | 0 | 10 | 0 | 0 | 11 | 6 |
| 1 in. by 7 in. do. do. do. | 0 | 11 | 6 | 0 | 13 | 6 |

6 in. at 6d. to 9d. per square less than 7 in.

**JOISTS, GIRDERS, &c.**

| | In London, or delivered Railway Vans, per ton. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Rolled Steel Joists, ordinary sections | 6 | 5 | 0 | 7 | 5 | 0 |
| Compound Girders, ordinary sections | 8 | 2 | 6 | 9 | 5 | 0 |
| Angles, Tees and Channels, ordinary sections | 7 | 17 | 6 | 8 | 17 | 6 |
| Flitch Plates | 8 | 5 | 0 | 8 | 15 | 0 |
| Cast Iron Columns and Stanchions including ordinary patterns | 7 | 2 | 6 | 8 | 5 | 6 |

**METALS.**

| | Per ton, in London. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON— Common Bars | 7 | 10 | 0 | 8 | 0 | 0 |
| Staffordshire Crown Bars, good merchant quality | 8 | 0 | 0 | 8 | 10 | 0 |
| Staffordshire "Marked Bars" | 10 | 10 | 0 | — | | |
| Mild Steel Bars | 8 | 15 | 0 | 9 | 5 | 0 |
| Hoop Iron, basis price | 9 | 5 | 0 | 9 | 10 | 0 |
| ,, ,, galvanised | 17 | 10 | 0 | — | | |
| (*And upwards, according to size and gauge.) | | | | | | |
| Sheet Iron (Black)— Ordinary sizes to 20 g. | 9 | 15 | 0 | — | | |
| ,, ,, 24 g. | 10 | 15 | 0 | — | | |
| ,, ,, 26 g. | 12 | 5 | 0 | — | | |
| Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g. | 12 | 15 | 0 | — | | |
| Ordinary sizes to 22 g. and 24 g | 13 | 5 | 0 | — | | |
| ,, ,, 26 g. | 14 | 5 | 0 | — | | |
| Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g. | 16 | 0 | 0 | — | | |
| ,, ,, 22 g. and 24 g. | 16 | 10 | 0 | — | | |
| ,, ,, 26 g. | 18 | 0 | 0 | — | | |
| Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g | 12 | 15 | 0 | — | | |
| ,, ,, 22 g. and 24 g. | 13 | 5 | 0 | — | | |
| ,, ,, 26 g. | 14 | 0 | 0 | — | | |
| Best Soft Steel Sheets, 6ft. by 2ft. to 3 ft. by 20 g. and thicker | 11 | 15 | 0 | — | | |
| Best Soft Steel Sheets, 22 g. & 24 g | 12 | 15 | 0 | — | | |
| ,, ,, ,, 26 g | 14 | 0 | 0 | — | | |
| Cut nails, 3 in. to 6 in. | 9 | 5 | 0 | 9 | 15 | 0 |
| (Under 3 in., usual trade extras.) | | | | | | |

**LEAD, &c.**

| | Per ton, in London. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| LEAD—Sheet, English, 3lb. and up | 14 | 0 | 0 | — | | |
| Pipe in coils | 14 | 10 | 0 | — | | |
| Soil pipe | 17 | 0 | 0 | — | | |
| Compo pipe | 17 | 0 | 0 | — | | |
| ZINC—Sheet— Vieille Montagne ton | 26 | 5 | 0 | — | | |
| Silesian | 26 | 0 | 0 | — | | |
| COPPER— Strong Sheet per lb. | 0 | 0 | 10½ | — | | |
| Thin ,, | 0 | 0 | 11½ | — | | |
| Copper nails ,, | 0 | 0 | 11 | — | | |
| BRASS— Strong Sheet per lb. | 0 | 0 | 10 | — | | |
| Thin ,, | 0 | 0 | 11 | — | | |
| TIN—English Ingots ,, | 0 | 1 | 4 | — | | |
| SOLDER—Plumbers' ,, | 0 | 0 | 6½ | — | | |
| Tinmen's ,, | 0 | 0 | 8 | — | | |
| Plowpipe ,, | 0 | 0 | 9 | — | | |

**ENGLISH SHEET GLASS IN CRATES.**

| | | |
|---|---|---|
| 15 oz. | thirds | 2d. per ft. delivered. |
| ,, | fourths | 1½d. ,, ,, |
| 21 oz. | thirds | 3d. ,, ,, |
| ,, | fourths | 2½d. ,, ,, |
| 26 oz. | thirds | 3½d. ,, ,, |
| ,, | fourths | 3d. ,, ,, |
| 32 oz. | thirds | 4½d. ,, ,, |
| ,, | fourths | 4d. ,, ,, |
| Fluted sheet, 15 oz. | | 2½d. ,, ,, |
| ,, 21 oz. | | 3½d. ,, ,, |
| ¼ Hartley's Rolled Plate | | 1½d. ,, ,, |
| ⅜ ,, ,, ,, | | 2d. ,, ,, |
| ½ ,, ,, ,, | | 2½d. ,, ,, |

**OILS, &c.**

| | | £ | s. | d. |
|---|---|---|---|---|
| Raw Linseed Oil in pipes or barrels | per gallon | 0 | 1 | 8 |
| ,, ,, ,, in drums | ,, | 0 | 1 | 11 |
| Boiled ,, ,, in pipes or barrels | ,, | 0 | 1 | 11 |
| ,, ,, ,, in drums | ,, | 0 | 2 | 2 |
| Turpentine, in barrels | ,, | 0 | 3 | 8 |
| ,, in drums | ,, | 0 | 3 | 10 |
| Genuine Ground English White Lead | per ton | 19 | 0 | 0 |
| Red Lead, Dry | ,, | 19 | 0 | 0 |
| Best Linseed Oil Putty | per cwt. | 0 | 7 | 6 |
| Stockholm Tar | per barrel | 1 | 12 | 0 |

**VARNISHES, &c.**

| | Per gallon. £ | s. | d. |
|---|---|---|---|
| Fine Pale Oak Varnish | 0 | 8 | 0 |
| Pale Copal Oak | 0 | 10 | 6 |
| Superfine Pale Elastic Oak | 0 | 12 | 6 |
| Fine Extra Hard Church Oak | 0 | 10 | 0 |
| Superfine Hard-drying Oak, for seats of Churches | 0 | 14 | 0 |
| Fine Elastic Carriage | 0 | 12 | 6 |
| Superfine Pale Elastic Carriage | 0 | 16 | 0 |
| Fine Pale Maple | 0 | 16 | 0 |
| Finest Pale Durable Copal | 0 | 18 | 0 |
| Extra Pale French Oil | 1 | 1 | 0 |
| Eggshell Flatting Varnish | 0 | 18 | 0 |
| White Copal Enamel | 1 | 4 | 0 |
| Extra Pale Paper | 0 | 12 | 0 |
| Best Japan Gold Size | 0 | 10 | 6 |
| Best Black Japan | 0 | 16 | 0 |
| Oak and Mahogany Stain | 0 | 9 | 0 |
| Brunswick Black | 0 | 8 | 6 |
| Berlin Black | 0 | 16 | 0 |
| Knotting | 0 | 10 | 0 |
| French and Brush Polish | 0 | 10 | 0 |

## TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

**ABBEYDALE.**—For redecoration and general repairs, Abbeydale P.M. church and schools. Mr. J. P. Earle, architect, Norfolk-row, Sheffield:—

Alfred Machin, Sheffield ..... £195

**BIRKENHEAD.**—For the erection of a stable and coach house, Rosebrae, Birkenhead, for Mr. C. Gent. Mr. J. H. McGovern, architect, Liverpool:—

Councillor Snape* ..... £145

**BLAENGWYNFI.**—For supplying and laying 400 lineal yards of 6 in. c.i. socket pipes, Jersey-road, Blaengwynfi, for Glyncorrwg Urban District Council. Mr. W. P. Jones, Surveyor, Council Offices, Cymmer, Port Talbot:—

| | Per ton. | | Per ton. |
|---|---|---|---|
| E. Roberts | £5 5 0 | Needham & Co. | £5 7 6 |
| Thos. Spittle, Newport, Mon.* | 5 4 6 | C. Jordan | 5 10 10 |
| Hutchinson | 5 15 0 | Stanton Iron Works | 5 1 6 |
| Isca Co. | 5 2 6 | A. Stone | 5 10 0 |
| *Laying.* | Per lineal yd. | | Per lineal yd. |
| Rogers | 0 3 0 | Barnes & Chaplin, Cardiff* | 0 2 0 |
| Collins | 0 2 6 | | |

**BOOTLE.**—For alterations and additions to the Linacre Hotel, Linacre-lane, Bootle, for Mr. R. Scott. Mr. J. H. McGovern, architect, Harrington Chambers, 26, North John-street, Liverpool:—

| | |
|---|---|
| *General Contractors.*—Broadbridge & Reid* | £830 0 0 |
| *Additional Work.*—Broadbridge & Reid* | 229 10 0 |
| *Joiner.*—W. H. Clark* | 135 0 0 |
| *Joiner.*—Tippin Bros.* | 26 0 0 |
| *Electric Wiring.*—Whipple & Co.* | 12 10 0 |

**BURY.**—For hospital at Union Workhouse, Jericho, Bury, for the Guardians. Mr. A. Hopkinson, architect, 15, Agur-street, Bury. Quantities by architect:—

| | 1st Contract. | 2nd Contract. | The Whole. |
|---|---|---|---|
| Charles Brierley | £21,539 | £10,756 | £32,295 |
| John Inman | 21,200 | 10,715 | 31,915 |
| John Tinline | 20,750 | 10,420 | 31,170 |
| James Byrom* | 20,699 | 10,440 | 31,139 |

[All of Bury.]

**CHICHESTER.**—For the erection of a shed, and paving and drainage works at Cattle Market, for the Corporation. Mr. T. Pym Jones, City Surveyor, Lion-street, Chichester:—

| | | | |
|---|---|---|---|
| The Fireproof Partition Co. | £564 5 4 | Boulton & Paul | £418 10 0 |
| R. Cook & Co. | 560 0 0 | E. Turner | 390 0 0 |
| | | W. H. Gamnon | 382 7 0 |

**FARNHAM** (Surrey).—For the erection of new separation wards at the Workhouse, Farnham, for the Guardians. Messrs. Friend & Lloyd, architects, Grosvenor-road, Aldershot. Quantities by Mr. J. H. Hendrey, Frensham, Farnham:—

| | | | |
|---|---|---|---|
| P. J. Caesar | £2,510 | W. Smith | £2,260 |
| Martin, Wells, & Co., Ltd. | 2,490 | Fergusan & Co. | 2,255 |
| E. Garland | 2,369 | Tompsett & Co. | 2,250 |
| G. Mardon | 2,345 | J. Harris | 2,200 |
| Mitchell Bros. | 2,345 | Crosby & Co. | 2,171 |
| Musselliwhite & Sapp | 2,324 | F. Knight | 2,099 |
| A. Chuter | 2,289 | Bateman & Sons | 2,080 |
| | | G. Kemp, Aldershot* | 2,045 |

[Architects' estimate, 2,123*l.*]

**HARROGATE.**—For main drainage work (contract 4, section 2) for the Corporation. Mr. E. W. Dixon, M.I.C.E., 5, Prospect-crescent, Harrogate:—

| | | | |
|---|---|---|---|
| A. Braithwaite & Co. | £6,083 | J. L. Hampton Matthews, Harrogate* | £3,763 |
| J. Wilson & Sons | 5,497 | Wm. Morley & Sons | 3,407 |
| B. Firth & Co. | 4,736 | Hardy & Atkinson | 3,383 |
| A. Graham & Sons | 4,700 | Parker & Sharpe (withdrawn) | 3,369 |
| J. S. Dawson | 4,293 | | |
| Wm. Brigg | 4,228 | | |
| C. H. Dickenson | 4,059 | | |

**HAYWARD'S HEATH.**—For plastering Infirmary, and other work at Brighton County Borough Asylum. Mr. J. G. Gibbins, surveyor, 3, Palace-place, Brighton:—

| | | | |
|---|---|---|---|
| Antill & Squires | £638 0 0 | E. J. Kent | £418 0 0 |
| George Nicholls | 500 0 9 | J. M. Parsons, Brighton* | 397 2 0 |
| A. & S. Wheater | 495 0 0 | Martin Reece | 386 15 4 |
| James Barnes | 480 0 0 | | |
| Stephen Knight | 469 17 0 | | |

**HEXHAM.**—For 680 yards of pipe sewers, also tank and filters, for sewage disposal works at Farnley, Corbridge, for the Rural District Council. Mr. J. E. Parker, C.E., Post Office-chambers, Newcastle-on-Tyne:—

E. Henderson & Son, Ponteland ..... £405 18 10

[There were five other tenders.]

**HORSHAM.**—For stabling, &c., for the Urban District Council. Mr. R. Renwick, Council's Surveyor:—

| | | | |
|---|---|---|---|
| Wm. Roberts | £2,622 | G. Potter | £1,795 |
| Peerless-Dennis & Co. | 2,146 | H. Lindfield & Son | 1,698 |
| Box & Turner | 2,015 | Wm. Potter, Horsham† | 1,680 |
| Hillman & Murrell | 2,009 | | |
| J. G. Pickard | 1,880 | | |

**KENDAL.**—For supplying, excavating, and laying about 227 yards lineal of 18 in., and 117 yards of 9 in. Clucas's patent pipes, &c., for the Corporation. Mr. R. Hampton Clucas, C.E., Borough Engineer. Quantities by Engineer:—

| | | | |
|---|---|---|---|
| R. Woodburn | £626 4 0 | W. Canadice, Kendal* | £547 13 7 |
| H. W. Dixkin | 625 3 6 | | |

**KINGSTON-ON-THAMES.**—For erecting museum and art gallery for the Corporation. Mr. A. Cox, architect, 4, Adam-street, Adelphi, W.C.:—

| | | | |
|---|---|---|---|
| Perry & Co. | £4,500 | G. Kemp | £4,149 |
| Potter Bros. | 4,490 | Holliday & Greenwood | 4,147 |
| C. E. Sims | 4,392 | Smith & Sons | 4,123 |
| W. T. Renshaw | 4,347 | Wisdom Bros. | 4,114 |
| Strange & Sons | 4,259 | T. Gough & Co. | 4,090 |
| Patman & Fotheringham | 4,233 | Leslie & Co. | 4,072 |
| J. Parnell & Sons | 4,226 | S. E. Moss & Co. | 4,050 |
| Speechly & Smith | 4,190 | B. E. Nightingale | 4,049 |
| T. G. Sharpington | 4,188 | J. Ferguson & Co. | 4,000 |
| P. & E. Davey | 4,187 | W. H. Gaze & Son | 3,989 |
| J. W. Brooking | 4,179 | John Appleby & Sons | 3,974 |
| Johnson & Co. | 4,168 | Frank Hawkey* | 3,950 |
| E. West | 4,165 | E. Chamberlain | 3,886 |

**LIVERPOOL.**—For alterations to licensed premises 127, Stanhope-street, Liverpool, for Mr. F. Greaves Mr. J. H. McGovern, architect, Liverpool:—

Tippin Bros.* ..... £180

**LONDON.**—For the construction of new roads and sewers on Lord Westbury's Putney Hill Estate. Mr. J. C. Radford, engineer and surveyor, 163, Upper Richmond-road, Putney:—

| | | | |
|---|---|---|---|
| S. Kavanagh & Co. | £9,960 | W. R. Williams | £9,743 |
| B. Nowell & Co. | 9,865 | E. Parry & Co.* | 9,561 |
| Jos. Mears | 9,780 | | |

**PONTYPRIDD.**—For private street works, Parade and West-street, for the Urban District Council. Mr. P. R. A. Willoughby, A.M.Inst.C.E.:—

Charles Ash, Pontypridd* ..... £636 0 0

**PONTYPRIDD.**—For 900 yards stoneware pipe sewer works, Pwllgwaun, Cilfynydd, and Hopkinstown, for the Urban District Council. Mr. P. R. A. Willoughby, A.M.Inst.C.E.:—

Charles Ash, Pontypridd* ..... £330 0 0

**PONTYPRIDD.**—For (1) masonry abutments, fence, walls, and other works in connection with the reconstruction of Glyntaff Canal Bridge, Treforest; (2) supply and erection of steel work in connection with above bridge, for the Urban District Council. Mr. P. R. A. Willoughby, A.M.Inst.C.E.:—

*Masonry Abutments, &c.*

R. J. Mathias, Pontypridd* ..... £396 0 0

*Steel Work.*

Gilbert Thompson & Co., Birmingham* 306 5 0

[12*l.* 5*s.* per ton.]

**ST. AUSTELL** (Cornwall).—For additions and alterations at Workhouse, for Guardians of St. Austell Union. Mr. J. Mutton, architect, Charlestown, St. Austell, Cornwall:—

*Carpenter and Plumber.*

| | | | |
|---|---|---|---|
| A. Bennet* | £154 10 0 | J. Knight & Son | £127 9 0 |
| W. G. Behenna | 129 10 0 | A. Mably | 126 15 0 |

*Carpenter.*

| | | | |
|---|---|---|---|
| A. Bennet | 94 0 0 | J. Knight & Son* | 63 0 0 |

*Mason.*

| | | | |
|---|---|---|---|
| R. Richards | 88 0 0 | T. Sanders | 79 8 0 |
| C. Clemo | 86 13 0 | J. Jacob* | 77 0 0 |

*Plumber.*

| | | | |
|---|---|---|---|
| A. Sovering | 62 10 0 | E. Francis & Son* | 51 12 6 |
| E. Stocker | 60 9 0 | | |

[All of St. Austell.]

[Architect's estimate for total work, 190*l.*]

**SCARBOROUGH.**—For laying about 9,000 yards of wood block paving, and other work in connexion, in Westborough, Newborough, and Aquarium Top, for the Town Council. Mr. H. W. Smith, Borough Engineer and Surveyor, Town Hall, Scarborough:—

| | |
|---|---|
| T. S. Starkey | £5,553 12 11 |
| Improved Wood Pavement Co. | 5,334 10 9 |
| Isaac Robinson | 5,308 13 6 |
| Acme Wood Block Flooring Co., Ltd. | 4,850 14 8 |
| Jas. Brunton, New Cross-street, Hull* | 4,848 2 3 |
| J. W. Pearce | 4,685 19 10 |

**SEASCALE** (Cumberland).—For building a villa and boundary wall, &c., for Mr. F. W. Wrigley. Mr. James Tyson, architect, Seascale:—

J. Sharpe, Drigg Cross, Holmrook* ..... £841

[Complete tender.]

**SHERINGHAM.**—For alterations and additions and drainage respectively for the Sheringham Golf Club (Contracts Nos. 1 and 2). Mr. T. Inglis Goldie, architect, Bank-buildings, Bank-plain, Norwich:—

Alterations and Additions.—Contract No. 1.

| | | | |
|---|---|---|---|
| Blyth & Son | £113 12 10 | Sadler, C. A. | £95 0 0 |

[Architect's estimate, 100*l.*]

Drainage.—Contract No. 2.

| | | | |
|---|---|---|---|
| E. J. Edwards | £228 8 11 | T. & J. Burgoyne | £209 6 6 |
| Blyth & Son | 223 0 11 | C. A. Sadler | 200 15 0 |

[Architect's estimate, 213*l.*]

**STANLEY** (Durham).—For sewage disposal works on the bacterial principle, West Shield-row, Stanley, for the Urban District Council. Mr. J. Routledge, Surveyor to the Council, Front-street, Stanley:—

*No. 1 Contract.*

Wm. Ayton & Sons, Blackhill* ..... £2,897 15 8

*No. 2 Contract.—Ironfoundry.*

Smith, Patterson, & Co., Ltd., Dunston* 588 14 5

**SWINTON.**—For deepening a well, &c., for the Swinton Urban District Council. Mr. R. Fowler, C.E., Engineer and Surveyor, Council Offices, Swinton, near Rotherham:—

| | | | |
|---|---|---|---|
| J. Smalley | £452 12 6 | J. T. Hymas | £182 6 0 |
| R. D. Batchelor | 375 17 0 | T. C. Starkey | 160 2 6 |
| H. Brown & Co., Stourbridge* | 190 18 0 | | |

[Surveyor's estimate, 198*l.* 17*s.* 6*d.*]

**SWINTON.**—For making up Adwick-road and Spencer-street, for Swinton Urban District Council. Mr. R. Fowler, Surveyor, Council Offices, Swinton, near Rotherham:—

| | Adwick-road. | Spencer-street. |
|---|---|---|
| J. P. Searle | £128 6 2 | £289 17 5 |
| B. Roberts | 115 16 3 | 257 18 1 |
| C. Green & Co., Rotherham* | 105 7 6 | 245 2 4 |
| [Surveyor's estimate | 115 6 6 | 254 13 11.] |

**WHITCHURCH** (Shropshire).—For the Alexandra Temperance Hotel. Mr. Walter Webb, architect, Bargates, Whitchurch:—

| | | | |
|---|---|---|---|
| T. Pace | £2,874 | John Corfield | £2,520 |
| J. T. Jones | 2,857 | Richard Powell | 2,397 |
| G. Bullock | 2,677 | George Edge | 2,197 |
| T. G. Huxley | 2,600 | G. Dodd & Son, Whitchurch* | 2,030 |
| Samuel Manley | 2,625 | | |

**WICKLOW.**—For sewers, Main-street, Ball-alley, Market-street, etc., for Wicklow Urban Council. Mr. J. Pansing, Town Surveyor, Church Hill, Wicklow:—

| | | | |
|---|---|---|---|
| George Dixon | £610 10 0 | W. Rose, Abbey-st., Wicklow | £715 0 0 |
| William Murphy | 700 0 0 | | |

[‡ Accepted on the recommendation of the engineer, whose estimate was 725*l.*]

**WEALDSTONE.**—For street works (Mason's-avenue, Herga-road, &c.), for the Urban District Council. Mr. H. Walker, C.E., Surveyor, Council Offices, Wealdstone. Quantities by Surveyor:—

| | Mason's-avenue and Byron-road (Extension). | Herga-road. | Total. |
|---|---|---|---|
| | £ s. d. | £ s. d. | £ s. d. |
| F. Free & Sons | 2,312 4 9 | 1,578 12 9 | 3,890 17 6 |
| R. Ballard, Ltd. | 2,204 0 0 | 1,487 0 0 | 3,691 0 0 |
| A. B. Chapman | 2,190 11 3 | 1,490 12 0 | 3,681 3 3 |
| Thos. Adams | 2,177 17 5 | 1,480 6 5 | 3,658 3 10 |
| F. Fowles | 2,139 7 2 | 1,459 3 7 | 3,598 10 9 |
| Henry Brown, Watford* | 2,065 17 3 | 1,408 6 2 | 3,474 3 5 |


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